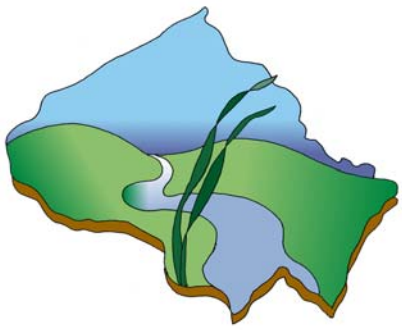
00-DP-3320 MD0068349 AUGUST 2006

Annual Report
NPDES Municipal Separate Storm Sewer System Permit



Published by the Montgomery County Department of Environmental Protection
for the Maryland Department of the Environment

THIS PAGE INTENTIONALLY LEFT BLANK

TABLE OF CONTENTS

TABLE OF CONTENTS (continued)

LIST OF ACRONYMS

BMP Best Management Practice

CIP Capital Improvement Program

USACE U.S. Army Corps of Engineers

DEP Department of Environmental Protection

DPS Department of Permitting Services

DPWT Department of Public Works and Transportation

EPA U.S. Environmental Protection Agency

GIS Geographic Information System

IBI Index of Biological Integrity

MDE Maryland Department of the Environment

MDP Maryland Department of Planning

MNCPPC Maryland National Capital Park and Planning Commission

MS4 Municipal Separate Storm Sewer System

NPDES National Pollutant Discharge Elimination System

USGS U.S. Geological Survey

WSSC Washington Suburban Sanitary Commission

LIST OF FIGURES

Page

LIST OF TABLES

ATTACHMENT A. COMPACT DISK WITH THE FOLLOWING ELECTRONIC FILES

SDI2006.zip GIS Storm drain file for 1998 through April 2006

APPENDIX.doc Annual Report Databases

MDENPDES05.mdb Required information in ACCESS 2000 database.

Urban Best Management Practices
NPDES Construction General Permits
Erosion and Sediment Control Responsible Personnel Training Certification
Illicit Discharge Program (and type codes)
Chemical Monitoring Site
Continuous Flow Monitoring
Chemical Monitoring Storm Event Data
Stormwater Programmatic Information
Stormwater Implementation Information

NPDES WATER CHEMISTRY MONITORING IN LOWER PAINT BRANCH WATERSHED. Versar, Inc.. June 21, 2006.

2005 NPDES Stormwater Design Manual Monitoring Final.pdf

Greenway Village Hydrologic Study for Point LSLS104.pdf

2006_toxicity_screening.pdf

MONTGOMERY COUNTY MARYLAND
NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM
MUNICIPAL SEPARATE STORM SEWER SYSTEM DISCHARGE PERMIT

I. BACKGROUND

This submission fulfills the requirement for an annual progress report to the Maryland Department of the Environment (MDE) as specified in Part V of Permit Number 00-DP-3320 MD0068349 (the Permit). The five-year Permit term began July 5, 2001, covering stormwater discharges from the municipal separate storm sewer system (MS4) in Montgomery County, Maryland. Significant accomplishments in the County's stormwater management program during the 2004 calendar year are highlighted in the Overview. The report itself has been organized based on the headings in the Permit's Section III. to document how specific required elements of the County's stormwater management program are being implemented. The database format for electronic submission is included on compact disc (CD) in Attachment A. This includes the field names, formats, and explanatory information provided by MDE.

The Montgomery County Department of Environmental Protection (DEP) has primary responsibility for the majority of the requirements of the Permit, including interagency coordination, annual reporting, source identification, discharge characterization, monitoring, stormwater facility inspection and maintenance enforcement, illicit discharge detection and elimination, watershed public outreach, and watershed restoration plans. The Department of Permitting Services (DPS) is responsible for the County's Stormwater and Sediment and Erosion Control Program. The Department of Public Works and Transportation (DPWT) is responsible for storm drains, road and roadside maintenance, solid waste disposal, and the General Permit for Storm Water Discharges Associated with Industrial Facilities at the County-owned vehicle and road maintenance and solid waste management facilities.

The MDE modified the County's Permit effective January 26, 2004 to add six small localities as co-permittees for coverage under the Phase 2 of the National Pollutant Discharge Elimination System (NPDES) MS4 Permit Program. There were five municipalities: the Towns of Chevy Chase, Kensington, Poolesville, and Somerset, and Chevy Chase Village; and one special tax district, the Village of Friendship Heights.

This is the fifth report in this five-year permit cycle. The MDE expects to complete the re-issuance of the third-round Permit process by the end of 2006. The MDE has indicated that the requirements of the next round Permit will not be significantly different from existing permit conditions.

II. OVERVIEW

Source Identification

The Permit requires Montgomery County to inventory and map potential pollutant sources and means of conveyance into receiving streams and other water bodies. The County has submitted with this report the update information for its storm drain inventory from 1998 to the end of April 2006. The information is in an ESRI Personal GeoDatabase (Microsoft Access) format. Each storm drain feature (such as headwall, outfall, pipe, etc.) is a feature class including all associated attributes. In addition, the drainage area is included for outfalls greater than the specified dimension (i.e. 36" for residential and commercial areas and 15" for industrial areas.) The County also submitted the most recent Urban Best Management Practices (BMPs) database of its stormwater management facilities.

Discharge Characterization

The Permit requires that "Montgomery County shall contribute to Maryland's understanding of stormwater runoff and its effect on water resources by conducting a monitoring program."

Long-term Discharge Characterization: The County submitted a summary of baseflow and storm event results and calculated pollutant loadings for all storms sampled at the Stewart-April Lane Tributary (outfall) and Lower Paint Branch (instream monitoring stations). The County has changed the pollutant control approach proposed for area draining into the Stewart-April Lane tributary. Based on modeling analysis of the 60% design, the planned stormwater pond retrofit was judged as not cost-effective and having too great an impact on the riparian buffer to justify its being built. The County is now focusing on source control and pollution prevention in the watershed. This approach will include installation of storm drain inlet inserts, routine streetsweeping and storm drain inlet cleaning, low impact design retrofit on private property, and public outreach. Monitoring will continue in order to document water quality improvements that result from structural and operational controls to reduce pollutants and trash being carried downstream.

Design Manual Monitoring: The County submitted preliminary results of monitoring at the Little Seneca LSLS104 "test" and Soper's Branch LBSB101 "control" subwatersheds selected to evaluate the effectiveness of the Maryland 2000 Design Manual criteria at protecting the stream channel. The analysis to date pertains to sediment and erosion devices as full conversion to post-construction stormwater best management practices (BMP) had not occurred in 2005. While there have been observed impacts on stream morphology and biology during construction, these may not persist after land cover is stabilized. Results of analysis on stormwater management effectiveness will begin after five years of post-construction monitoring have been completed.

Management Programs

Stormwater Facility Maintenance: In 2005, the DEP performed 1,145 initial inspections to assess the repair and maintenance needs of a stormwater management facility. Of these inspections, 959 were at privately owned facilities and 186 were at publicly owned facilities. These initial inspections identified the need for repair at approximately 46% of all structures--about 91% of the aboveground structures and 26% of the underground structures.

Stormwater Facility Permitting: The number of sediment control permits decreased in 2005 compared to 2004 (779 compared to 962), as did the total developed acres (1,414 compared to 1,498). During 2005, the number of stormwater BMPs permitted remained about the same throughout the County. The trend for increases in non-structural controls continued. Examples of non-structural controls include rooftop runoff disconnection and drainage to vegetated buffers or grassed swales.

Outfall Screening: For the year 2005, the DEP screened a total of 100 outfalls with 37 having dry weather flows. Of the 37 outfalls found to have flows, nine were determined to have dry weather flows other than from piped streams. Five of these showed detergent above detection limit with all total phenol, chlorine and copper being below detection limits and pH being within the acceptable range. Source tracking for these outfalls was unsuccessful. Screening of the discharge from a piped stream in lower Rock Creek watershed led to an overflowing used oil tank located in Silver Spring. The problem with the tank was corrected and approximately 50 gallons of used oil was removed and recovered from the stream by a spill contractor.

From 2001 through 2005, there were a total of 547 outfalls screened, with 102 showing dry weather flows (about 18.8%). Of those with dry weather flow, there were 34 (about 6%) requiring follow up investigations because water sampling showed one or more of the five indicator parameters above the method detection limits. The most common indicator was that of detergent, indicating washwater. The second most common indicator was that of chlorine, also an indicator of treated water either from the drinking water system directly (i.e. leaking pipes) or from swimming pools.

County's Industrial Facilities: In general, the annual assessments found that compliance with the Stormwater Pollution Prevention Plans was good. While the DPWT made progress in providing routine pollution prevention awareness to employees, no progress was made on updating the Stormwater Pollution Prevention Plans to reflect current operations at these facilities or completely eliminating outdoor vehicle washing as a non-stormwater discharge.

Public Education and Outreach: The County continues a multimedia approach for public outreach and education to increase environmental stewardship. Programs include workshops, print, video, web-based materials, and project-specific outreach for watershed restoration. During 2005, the Volunteers in Planting (VIPs) was initiated to augment the DEP's stream restoration program. Two plantings were completed in association with the Northwood Tributary project in Northwest Branch and the Lower Hawlings project in the Hawlings River watershed. The DEP identifies candidate projects and then provides lead technical assistance to community-based environmental organizations to complete the planting.

Environmental Policy**:** For FY05, departments and agencies committed to perform in four priority environmental issues for their Environmental Action Plans (EAPs). These priority issues were 1) Energy, 2) Pollution Prevention, 3) Environmentally Friendly Purchasing, and 4) Green Buildings. Environmental coordinators represented their departments, not only in planning and reporting on individual department efforts, but also in the development of an overall Countywide implementation effort. The first program area for interdepartmental cooperation is Environmentally Preferable Purchasing to require that contract cleaning services use environmentally preferable cleaning products for county owned buildings.

Road Maintenance and Pollution Prevention: This includes storm drain maintenance, roadside maintenance, and practices to reduce impacts from highway operations. During 2005, there was no change in the level of effort for storm drain maintenance so that at the current rate of less than 0.5% of the system per year, it will take 200 years for a first pass of the entire system.

During the winter season for 2005, the DPWT-DHS applied 24,450 tons of sand and salt. The total removed by the once per year street sweeping program was 1,676 tons which is less than 7% of the total applied**.** The southern part of the county, particular the Anacostia and Lower Rock Creek watersheds, continued to show the highest tons of material collected per curb mile. These two areas will continue to be targeted for priority sweeping.

Integrated Pest Management (IPM): The County continues to implement its IPM program at county owned facilities, with an emphasis on physical rather than chemical measures for pest control. There were no fertilizers applied at any of the 98 facilities comprising 250 acres that were in the County landscaping program during 2005. The County continues to work with facility occupants to stress the need for proper sanitation measures to control pests. Pesticides are used only when all other measures have failed.

Watershed Restoration

The Permit requires that the County continue its systematic assessment of water quality within all of its watersheds and to maximize water quality benefits in priority subwatersheds using efforts that are definable and the effects of which are measurable. Since 1996, the County has completed assessments and identified restoration opportunities in about 40% of its total watershed area, including all of the urban watersheds required in its first Permit. Total cost through December 2005 (including State and Federal cost-share funding) for watershed studies completed or ongoing is $6.077 million and for projects completed is $7.310 million dollars. The County goal is to add stormwater controls to 4,700 acres of currently uncontrolled drainage and to construct restoration projects on 30 miles of degraded streams by 2012.

Watershed Screening: The DEP completed screening in the Furnace Branch, Hawlings River, Little Monocacy, the Potomac River direct, and the Upper Patuxent watersheds during 2005. Of the 43 stations monitored, only one (in the Potomac Direct watershed) had impairment in both fish and benthic macroinvertebrate fauna. Follow up monitoring will occur as part of the illicit discharge screening for the next year.

From 2001-2005, the percent of stations identified as impaired was about 25% of those monitored compared to over 60% of those monitored during the first Permit period. One station in Northwest Branch was listed as having impairment to both biological communities during both 2002 and 2004. This station is in an area where stream restoration will occur with a goal to address physical habitat impairments affecting both faunal groups.

Selected Restoration Watershed:

Total developed acreage under county responsibility for stormwater management (81,603) is about 33.6% of total county acreage minus excluded areas. Of that, only 52% (42,480) has some sort of stormwater management. The restoration goal for 10% of the impervious area in the County has been revised to 2,694.5 acres. The combination of acres in Turkey Branch (2,434) and acres to

completed restoration projects as of January 2006 (2,872) exceeds the 2005 adjusted impervious acreage so that the County is meeting the Permit-required restoration acreage goal.

There was no change during 2005 in the status of project implementation in Turkey Branch (first restoration subwatershed) or Hollywood Branch (next selected for restoration.) Two stream restoration projects in Lower Turkey Branch, covering impacts in 1.7 linear miles of stream, are expected to be completed by spring, 2007. The Lower Paint Branch Watershed Study has not yet been finalized.

Program Funding

The County proposes a budget of $14.7 million to comply with Permit requirements during FY07. This is an increase of about $1.8 million compared to the previous year. Most of the increase comes from the CIP for watershed restoration project implementation.

Assessment of Controls

The Permit requires the County to estimate TN and TP annual stormwater loads from developed lands and the reductions associated with existing stormwater controls in the County for 2005. Out of the total of 324, 552 acres in the county, 81,603 developed acres are under the County's control for stormwater. This excludes the rural zoning, parklands, forests in parklands, the Cities of Rockville, Gaithersburg, and Takoma Park, state and federal properties, and state maintained roads. Existing stormwater management provides an estimated 15.6% reduction in TN and a 19.7% reduction in TP loadings in runoff compared to uncontrolled conditions.

Special Programmatic Conditions

Interjurisdictional Cooperation

The County continued its activities in ongoing multi-jurisdictional efforts to protect the Anacostia and the Patuxent Reservoirs Watershed. Over the past 10 years, this has led to cooperative funding for monitoring, modeling, and restoration and retrofit project inventories, design, and construction. The County monitoring results are being used for regional screening and priority setting in these watersheds. The programs and projects being implemented through these watershed groups contribute toward the County's Permit-required watershed restoration goal and also the pollutant reductions that will be needed to meet the Tributary Strategies nutrient caps.

Next Permit Cycle

The County's existing permit was due for re-issuance in July 2006, although all current Permit requirements will stay in force until a new Permit is issued. The County proposes to continue its current level of effort for source identification, discharge characterization, management programs, watershed restoration, and program funding. The County has requested a change in required frequency of reporting pollutant loadings to twice in the Permit period. Changes in controlled acreage from year to year are very small relative to the total acreage of developed land in the County and consequently, there is very little difference in the loadings calculated from one year to the next.

III. STANDARD PERMIT CONDITIONS

A. Permit Administration

An updated organization chart and contact information is shown in Table III-A1 and enclosed electronically on the CD in Attachment A.

Table III-A1. Organization Chart for Montgomery County Permit-Required Programs

Part III. Standard Permit Elements	**RESPONSIBLE PARTY**			
	Department	***Name***	***Title***	***Telephone***
A. Organization Chart	*DEP/DEPC*	Meosotis Curtis	*Senior Planning Specialist*	240-777-7711
B. Legal Authority	*OCA*	Walter Wilson	*Associate County Attorney*	240-777-6759
C. Source Identification				
GIS for storm drain system	*DPS*	Joe Cheung	*Manager*	240-777-6299
GIS for Stormwater Management Facilities	*DEP/WMD*	Daniel Harper	*Manager*	240-777-7709
Urban Best Management Practices Database	*DEP/WMD*	Daniel Harper	*Manager*	240-777-7709
D. Discharge Characterization				
Water Chemistry Monitoring	*DEP/DEPC*	Meosotis Curtis	*Senior Planning Specialist*	240-777-7711
Biological and Physical Habitat Monitoring	*DEP/WMD*	Keith Van Ness	*Senior Water Quality Specialist*	240-777-7726
Design Manual Criteria Evaluation	*DEP/WMD*	Keith Van Ness	*Senior Water Quality Specialist*	240-777-7726
	DPS	Leo Galanko	*Senior Permitting Services Specialist*	240-777-6242
E. Management Programs				
Stormwater Facility Inspections and Maintenance	*DEP/WMD*	Daniel Harper	*Manager*	240-777-7709
Stormwater Management Permitting and Plan Review	*DPS*	Richard Brush	*Manager*	240-777-6343
Illicit Connection Detection and Elimination Program	*DEP/DEPC*	Steve Martin	*Field Program Manager*	240-777-7746
County Facility Stormwater Permit Compliance	*DPWT/DO*	Al Roshdieh	*Division Chief*	240-777-6008
Illegal Dumping and Spills	*DEP/DEPC*	Steve Martin	*Field Program Manager*	240-777-7746
Erosion and Sediment Control	*DPS*	Michael Reahl	*Manager*	240-777-6344
General Environmental Outreach	*DEP/DO*	Joseph Keyser	*Environmental Education Coordinator*	240-777-7720
Road and Roadside Maintenance Pollution Reduction Plan	*DPWT/DHS*	John DiGiovanni	*Field Services Section Chief*	240-777-7633
Pollution Reduction Plan and Compliance for County Government Departments	*DPWT/DO*	Al Roshdieh	*Division Chief*	240-777-6008
Pollution Prevention Program	*DEP/DEPC*	Ligia Moss	*Senior Engineer*	240-777-7756

Table III-A1. Organization Chart for Montgomery County Permit-Required Programs				
Part III. Standard Permit Elements	**RESPONSIBLE PARTY**			
	Department	***Name***	***Title***	***Telephone***
F. Watershed Restoration				
Countywide Monitoring	*DEP/WMD*	Keith Van Ness	*Senior Water Quality Specialist*	240-777-7726
Assessments and Project Implementation	*DEP/WMD*	Daniel Harper	*Manager*	240-777-7709
G. Program Funding	*DEP/WMD*	Meosotis Curtis	*Senior Planning Specialist*	240-777-7711
H. Assessment of Controls	*DEP/DEPC*	Meosotis Curtis	*Senior Planning Specialist*	240-777-7711
Part IV. Special Programmatic Considerations	*DEP/DEPC*	Meosotis Curtis	*Senior Planning Specialist*	240-777-7711
Part V. Annual Reports	*DEP/DEPC*	Meosotis Curtis	*Senior Planning Specialist*	240-777-7711

DEPARTMENT ADDRESSES:

DEP/DEPC: *Department of Environmental Protection/ Division of Environmental Policy and Compliance*
255 Rockville Pike, Ste 120, Rockville MD 20850
DEP/DO: *Department of Environmental Protection/ Director's Office*
255 Rockville Pike, Ste 120, Rockville MD 20850
DEP/WMD: *Department of Environmental Protection//Watershed Management Division*
255 Rockville Pike, Ste 120, Rockville MD 20850
DPS: *Department of Permitting Services/Division of Land Development Services*
255 Rockville Pike, 2nd floor, Rockville MD 20850
DPWT/DHS: *Department of Public Works and Transportation/Division of Highway Services*
101 Orchard Ridge Dr. 2nd Flr. Gaithersburg MD 20878
DPWT/DO: *Department of Public Works and Transportation/Division of Operations*
101 Orchard Ridge Dr. 2nd Flr. Gaithersburg MD 20878
OCA: *Office of the County Attorney*
101 Monroe St. 3rd Floor, Rockville, MD 20850

B. Legal Authority

The MDE modified the County's permit effective January 26, 2004 to add six small localities as co-permittees for coverage under the Phase II of the NPDES MS4 Permit Program. The County is continuing its oversight, inspection, and enforcement authority over these five municipalities: the Towns of Chevy Chase, Kensington, Poolesville, and Somerset, and Chevy Chase Village; and one special tax district, the Village of Friendship Heights. There was no change in status of legal authority for these co-permittees during 2005.

C. Source Identification

C1. Electronic Mapping

The DPS continues work on drainage area delineation for the storm drain system added since October 1997. The DPS is coordinating with the DPWT to obtain the paper files of the County's CIP storm drain projects to begin the scanning. Table III-C1 shows the status of the DPS project during 2005.

Attachment A includes a CD with a zip file containing the DPS Storm Drain Inventory completed as of the end of April, 2006. The information is in an ESRI Personal GeoDatabase (Microsoft Access) format. Each storm drain feature (such as headwall, outfall, pipe, etc.) is a feature class including all associated attributes. In addition, the DrainageArea feature class is the new one for outfalls greater than the specified dimension (i.e. 36" for residential and commercial areas and 15" for industrial areas.

Table III-C1. Status of Storm Drain Electronic Mapping by the Montgomery County Department of Permitting Services during 2005.

January 2005

- Had help from 2 additional GIS Interns for a few weeks.
- Completed 10 (day-forward) Public Storm Drain permits
- Completed 50 (1998) Private Storm Drain permits

February 2005

- Consolidate all day-forward Public Storm Drain permits
- Completed 50 (1998 and 1999) Private Storm Drain permits
- Consolidated 30 Private Storm Drain permits

March to May 2005

- Completed about 160 Private Storm Drain permits
- Consolidate about 50 Private Storm Drain permits
- Worked with DEP on progress coordination and drainage area delineation
- Created preliminary version of integrated (DEP and DPS) storm drain data layer
- Worked with DPWT to obtain scanned images for CIP storm drain drawings
- Hired two additional GIS Interns for the Summer

June to August 2005

- Completed all Private Storm Drain permits
- Consolidate all Private Storm Drain permits
- Finalize drainage area delineation process
- Digitized drainage area for all public storm drain permits
- Digitized drainage area for all private storm drain permits

September to December 2005

- Digitized storm drain features for 7 CIPs

Abbreviations:

GIS	Geographic Information Systems	CIP	Capital Improvement Program
DEP	Department of Environmental Protection	DPS	Department of Permitting Services

C2. Urban BMP Database

The County maintains an electronic database of its stormwater management facilities which is used to generate the format required for the MDE's Urban BMP Database. This data is included in electronic format in the database on CD in Attachment A.

There are 3,488 records in this database, shown by structure type in Table III-C2. The three structure types with the greatest number are Oil Grit Separator (717), Dry Pond Quantity Control Only (468), and Infiltration Trench Quality Control Only (347). There are approximately 1,964 unique sites represented with multiple facilities on one site sharing the same integer for structure number (STRU_NO) but different non-integer number (e.g. STRU_NOs 1002 and 1002.2 are on the same site). The multiple facilities may be in-series (for sequential treatment) or may be separately located around the site. There are 3,335 geospatial data points designating the control structure or other feature for the stormwater facilities in Montgomery County. There are 2,987 geospatial polygons for the drainage area (DA) of the stormwater facilities. There are more geospatial points than DAs because some pretreatment and diversion devices have the same DA as the terminal facility and are not delineated.

The DEP has made significant efforts again this year to find information from existing paper files for all facilities constructed prior to the County's first Permit (1996), as well as to update existing electronic records of stormwater facilities. This effort requires going through each record in the Microsoft Access database used to maintain data on the County's stormwater facilities, reviewing paper files kept by the DPS and using geospatial analysis to correctly update the data. To date, this effort is approximately 70% finished and has resulted in the removal of over 600 records with inaccurate data from the Microsoft Access database. The DEP expects that at least 100 to 200 more facilities will be removed from the database over the coming year. At the same time, the DEP is working on improving the geospatial DA and point location geodatabase. Due to the concurrent effort to improve both the Microsoft Access database and the geodatabase, the data between the two databases may not be identical at the time of the generation of the Urban BMP Database NPDES report. This effort is being conducted in anticipation of moving to a new data management system within the next year and the DEP expects the data deficiencies to be resolved before the data is moved.

There are a few data fields with consistent missing data or data irregularities, including four required for the Urban BMP database. These are drainage area, built date, land use, and structure type.

Drainage Area (DA) – There are structures shown in the database that are still missing DA. This is because the DA has not yet been calculated or the facility itself has not yet been confirmed through the inspections program and therefore may not exist. The effort to improve the database may also have resulted in facilities identified that have not yet had their DA delineated. Furthermore, pretreatment and diversion devices will not have a separate DA as these facilities have identical DAs and are not delineated.

Built Date – For many of the pre-1996 structures, the date was not recorded and cannot be determined from existing paper files. DEP is making an effort to add built date data for the facilities entered into the database after 1996.

Land Use – The MDP land use classification included with the Urban BMP Database are based on the 2001 data layer provided by MDP. Due to the date of this data, some land uses in the database do not accurately reflect the updated land use conditions known by the County at the time of the submission.

Structure Type – The MDE structure type of other is frequently used by the DEP. An explanation of how DEP classifies structures with an MDE "other" structure type is included in general comments.

In addition to these four Permit-required fields, there are two other attribute fields with missing or incomplete data. These are Permit Number and ADC Map book location.

Permit Number – This year DEP has included a "place-holder permit number" for the facilities that were built prior to 1986 and do not have a permit number. Because many of these facilities were built prior to Montgomery County's authority to permit such facilities DEP will not be able to recover a permit number from the paper files for it is not known if one existed. This place holder number is "0000000000" and is DEP's final attempt to recover the data from the paper files. All original permit numbers known for the facilities built prior to 1986 were entered into the database (typically a 6 digit number). In addition, A 10 digit place holder number beginning with 900118XXXX was also entered for those facilities built prior to 1986. This number was created by the DPS in order for those facilities to be entered into their database system. DEP has kept this permit number in order to allow interfacing with the DPS database. There are data missing in the permit number field for facilities built after 1986. DEP will focus over the coming year to pull the permit number from the paper files and as-built plans to populate this field.

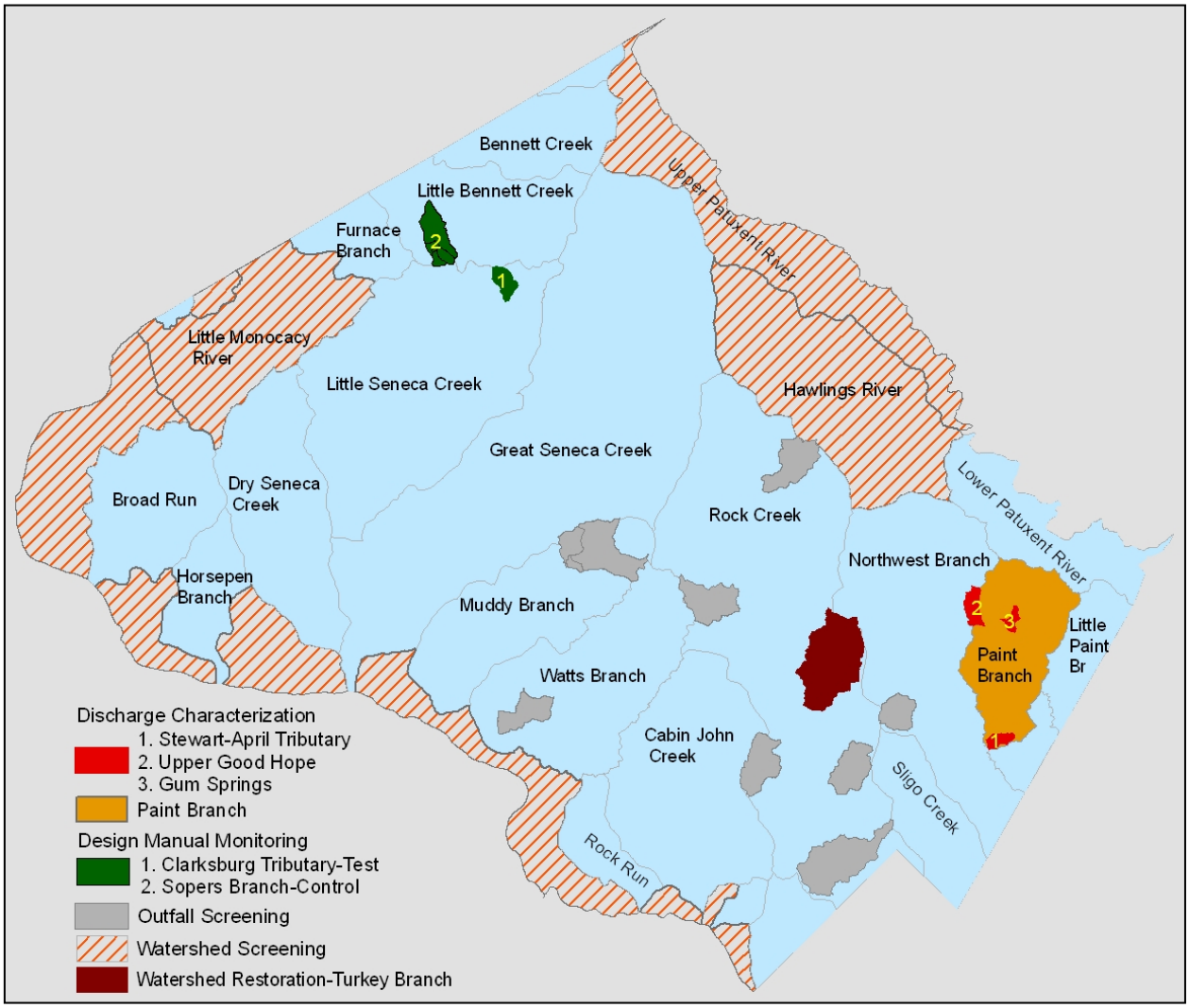
ADC Map – Over the past two years, DEP has made a concerted effort to populate the ADC Map field with the 2001 to current year ADC Map Book locations. DEP's effort specifically focuses on those facilities that lack the MD grid coordinate data as it is understood that ADC map book location can be used in place of the Maryland grid coordinates. DEP expects to complete populating the ADC Map fields within the next year and will continue to default to populating this field when MD grid coordinates are not available.

Table III-C2. Total Number of Stormwater Facilities by Structure Type Designation			
MDE Structure Type	**DEP**		**Total Number**
	Structure Type	**Structure Type Description**	
AS	DS	Dry Swale	2
BR	BR	Bioretention, quality control	43
BR	BRQN	Bioretention, quantity control	1
BS	BAYSAV	Baysaver	33
DP	PDQN	Pond-dry, quantity control only	468
DP	PDQNSF	Pond-dry, quantity control and sand filter base	63
EDSD	PDQNED	Pond-dry, quantity control and extended detention	45
EDSW	PDWTED	Pond-wet, extended detention	7
EDSW	PDWTQNED	Pond-wet, quantity control and extended detention	54
FlSp	FS	Flow splitter	321
IB	PDIB	Pond-infiltration basin, quality control only	22
IB	PDIBED	Pond-infiltration basin, extended detention	3
IB	PDIBQN	Pond-infiltration basin, quantity control only	27
IB	PDIBQNED	Pond-infiltration basin, quantity control and extended detention	6
IT	INF	Infiltration trench, quality control only	347
IT	INFQN	Infiltration trench, quality and quantity control	55
IT	INFU	Infiltration trench, quality control underground	97
IT	INFUQN	Infiltration trench, quality and quantity buried, non-surface fed	10
LS	LS	Level spreader	16
MP	PP	Plunge pool	9
MP	VP	Vegetated pool	5
O	AQFIL	Aquafilter	4
O	AQSW	Aquaswirl	5
O	CS	Control structure, underground only	8
O	INFIL	Infiltrator	3
O	INT	Interceptor	1
O	STFIL	Stormfilter	23
O	VORTEC	Vortechnics	1
OGS	SEP	Oil/grit separator	717
OGS	SEPSF	Oil/grit separator and sand filter	88
SC	STC	Stormceptor	194
SF	PSF	Peat sand filter	1
SF	SF	Sand filter	231
SF	SFQN	Sand filter, quantity control only	22
SF	SFU	Sand filter, underground	35
SM	PDWD	Pond-wetland only	9
SM	PDWDED	Pond-wetland, extended detention	14
SM	PDWDQN	Pond-wetland, quantity control only	36
SM	PDWDQNED	Pond-wetland, quantity control and extended detention	39
SW	VS	Vegetated swale	2
UGS	UG	Underground detention	263
UGS	UGINF	Underground with a stone bottom	7
WP	PDWT	Pond-wet, quality control only	43
WP	PDWTQN	Pond-wet, quantity control only	108

D. Discharge Characterization

The permit requires that "Montgomery County shall contribute to Maryland's understanding of stormwater runoff and its effect on water resources by conducting a monitoring program." The locations of the County stations and watersheds in which Permit-required monitoring took place during the year 2005 are shown in Figure III-D1. These include the Paint Branch stations for discharge characterization, the control and test subwatersheds for the design manual monitoring, the watersheds targeted during the outfall screening program, the watersheds screened during the countywide stream monitoring, and the Turkey Branch subwatershed, the first one selected to meet the impervious control goal.

Figure III-D1. Stations and Waterhseds for Permit-Required Monitoring during 2005.



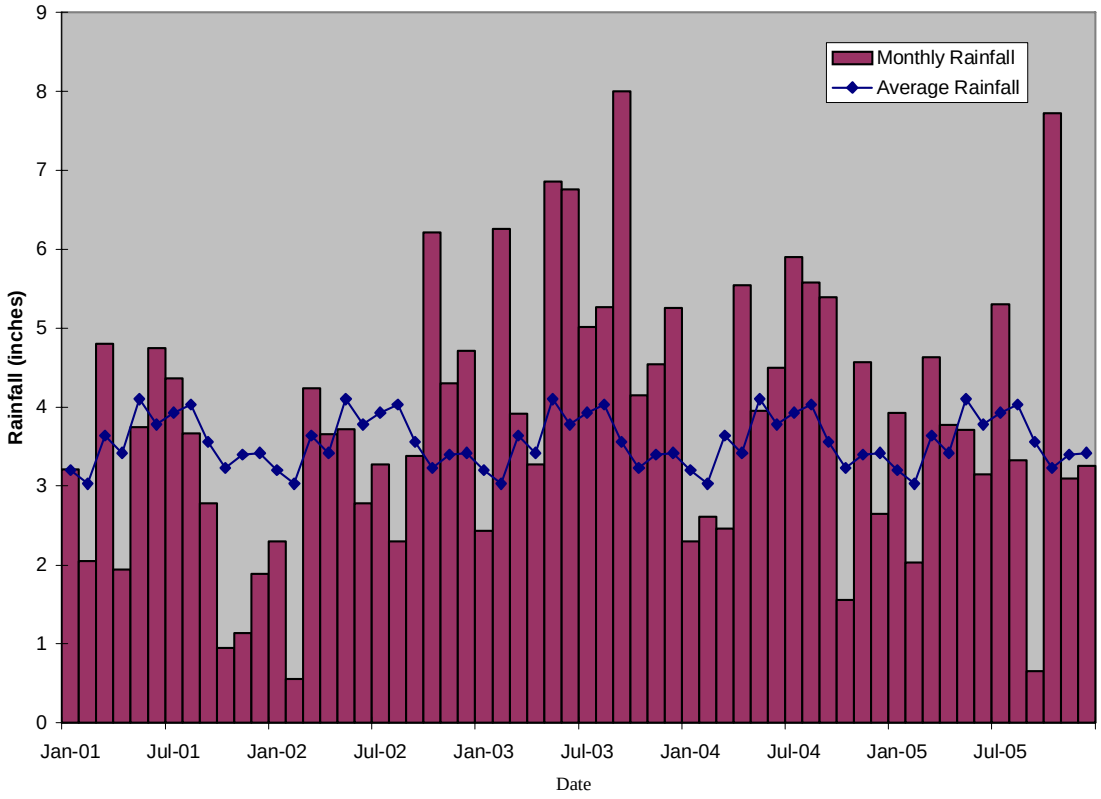
D1. Outfall and Instream Monitoring

During 2005, the DEP continued water chemistry monitoring at one outfall and one mainstem station in the Lower Paint Branch Watershed to meet the Permit requirements. A continuous recording rain gauge has been established approximately two miles north of the monitoring stations. Water chemistry monitoring stations were located on Stewart-April Lane Tributary and Paint Branch, below the confluence with the tributary. The Permit-required data are included in the database on CD in Attachment A. A detailed summary report of baseflow and stormflow concentrations and storm loads is also included on CD in Attachment A.

Rainfall

Rainfall pattern during 2001-2005 varied markedly from year to year. There was below normal rainfall in 2001 and 2002, including an extended drought. There was record high precipitation during 2003, and spring and summer 2004. Rainfall during 2005 was generally below normal except for the October monthly total which was augmented by the rainfall from Tropical Storm Tammy. Monthly rainfall in the region for monitored years 2001-2005 is summarized in Figure III-D2.

Figure III-D2. Average and observed monthly precipitation (inches) in Maryland 2001-2005 Northeast Regional Climate Center, 2006. Statewide average.



Hydrology Modeling

The Permit requires that a model be conducted to evaluate rainfall to runoff characteristics of the contributing watershed. The U.S. Army Corps of Engineers (USACE) completed the hydrology model for existing and proposed retrofit construction runoff characteristics at the Stewart-April Lane Tributary and submitted these results as part of the Water Quality Certification Process.

Change to Source Control Approach

There has been a significant change in the design of the proposed facility since the 30% concept design. These changes were necessary to meet the significant site constraints, including utility and access issues. During 2005, engineering analysis determined that the proposed 60% design would provide only 0.79 acre-feet of water quality volume (WQv) control and only 4.3 acre feet of channel protection volume (CPv).

As shown in Table III-D1, other retrofits in the Anacostia provide significantly greater percentages of quality treatment and channel protection volumes. Typically, the DEP tries to develop projects that provide at least half the WQv (and CPv depending on the project goals) normally required under current MDE criteria with a maximum cost of $8,000 per acre controlled.

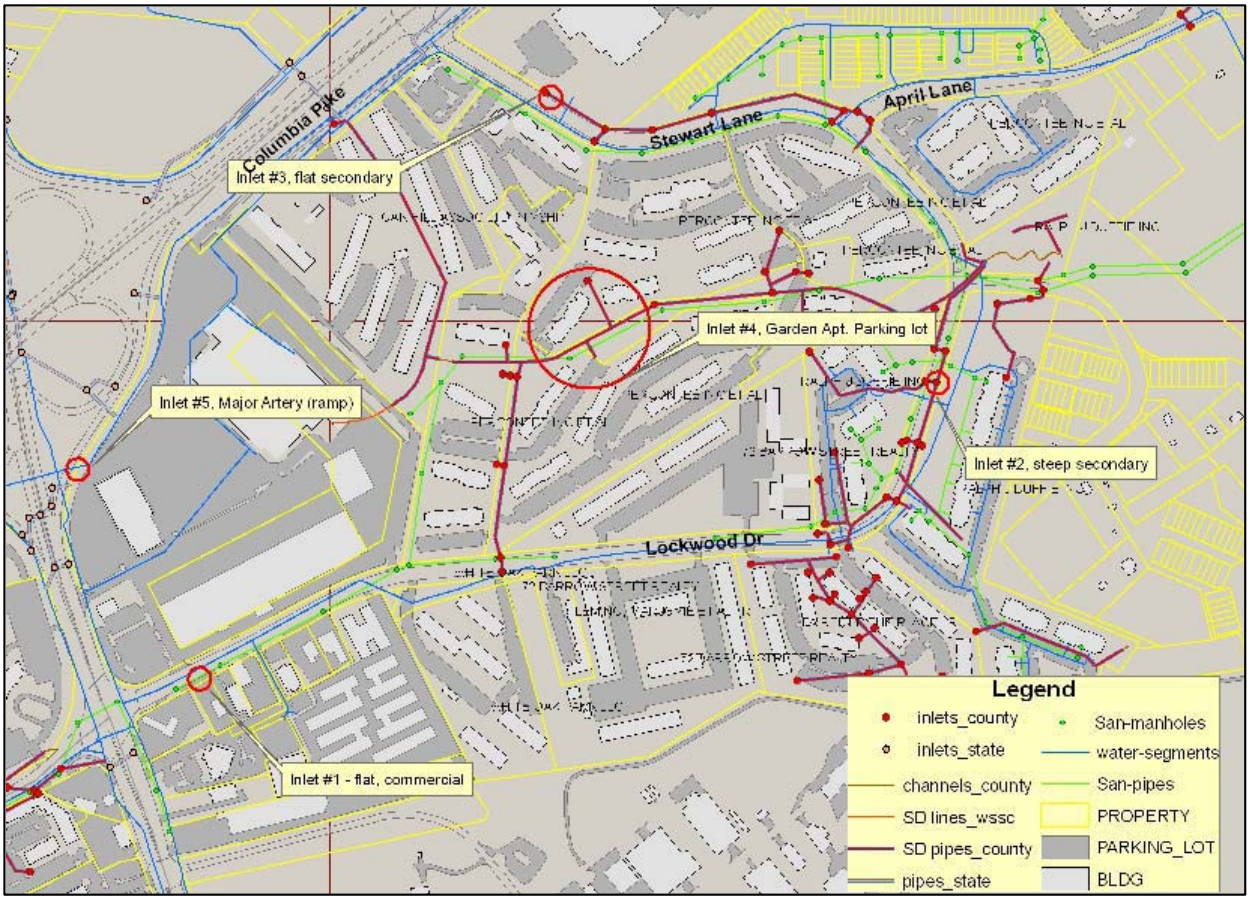
The proposed pond retrofit also posed significant issues for maintaining the riparian buffer. From 0.4 to 2 acres of mature, high quality forested buffer would need to be removed for access and grading. During 2006, the DEP recommended that the USACE discontinue the pond retrofit at this site given the tree save concerns coupled with the low WQv and CPv.

Table III-D1. Water Quality and Channel Protection Volume from three retrofit facilities in the Anacostia Watershed

RETROFIT FACILITY	Water Quality (WQv in Acre-Feet)		
	Provided	**Typically Required**	**Percent Provided of Typically Required**
Stewart-April (proposed from 60% design)	0.79	7.9	10
University Boulevard	2.7	13.1	21
Wheaton Branch	11.3	37.8	30
Wet volume only			
RETROFIT FACILITY	**Channel Protection Volume (CPv in Acre-Feet)**		
	Provided	**Typically Required**	**Percent Provided of Typically Required**
Stewart-April (proposed from 60% design)	4.3	10.2	42
University Boulevard	about 14	19.5	Estimated 70-80
Wheaton Branch	about 24 (to 32)	45.4	Estimated 55-70
Includes Extended Detention Volumes per the MDE Manual			

The DEP is now focusing on a source control approach to controlling pollutants from this drainage area. The DEP has received a $500,000 EPA award, through Prince George's County Department of Environmental Resources, to focus on reducing pollutants and trash entering the Anacostia. About half of this funding is supporting a pilot study on the implementation and monitoring of structural and operational best management practices to control trash and associated pollutants in the White Oak subwatershed in Lower Paint Branch The trash management component includes both water chemistry and solids monitoring as well as trash characterization pre- and post-implementation. Structural controls will include inlet modifications to more effectively prevent trash from entering the storm drain system. Operational approaches include routine streetsweeping and storm drain inlet cleaning in the contributing drainage area. Pre-project monitoring of the inlets will begin in Summer 2006 and outfall and instream monitoring will continue at the existing stations throughout the next Permit cycle. Figure III-D3. shows the storm drain system in the White Oak subwatershed upstream of Stewart-April Lane. The red circles indicate the inlets proposed for monitoring.

Figure III-D3. Storm drain system in White Oak sub-watershed. Circles indicate inlets proposed for monitoring.



Water Chemistry

During 2002-2005, the baseflow mean concentrations (MCs) of total nitrogen in both Stewart-April Lane Tributary and Paint Branch were higher than corresponding storm event mean concentrations (EMCs). Results are shown in Table III-D2. Paint Branch storm EMCs and baseflow MCs were higher than corresponding concentrations in the Stewart-April Lane tributary. In the Stewart-April Lane Tributary, the total nitrogen concentrations were often highest during the rising limb. This indicates likely contributions of nitrogen during the early stages of a storm from first-flush runoff of nitrogen compounds from impervious surfaces in the upstream catchment.

Calculated storm EMCs and baseflow MCs show that during 2002-2005, average total phosphorus baseflow concentrations were lower than storm flow concentrations at both stations. Baseflow concentrations of phosphorus at both stations were nearly always below the reportable detection limit of 0.05 mg/L in 2002-2005. Storm EMCs for total phosphorus at Paint Branch were higher than corresponding concentrations at Stewart-April Lane Tributary, possibly related to the relatively greater proportion of lawns and open land on which fertilizer application may be occurring.

Baseflow MCs of total suspended solids (TSS) were higher at Stewart-April Lane Tributary than at Paint Branch. Conversely, storm EMCs of TSS tended to be higher at Paint Branch than at Stewart-April Lane Tributary during 2002-2005. Concentrations of TSS showed a generally positive relationship with stream discharge associated with discrete rising, peak, and falling limb composite samples from storm events at Paint Branch. Storm event TSS concentrations showed a positive relationship only during peak limb discharge at Stewart-April Lane Tributary.

Storm flow zinc and copper EMCs were higher at Stewart-April Lane Tributary than at Paint Branch. Baseflow zinc and copper were likewise higher, probably due to the higher proportion of urbanized land use. The large amount of residential and commercial parking areas in the contributing drainage were implicated as potential sources of these pollutants carried by storm water runoff. Storm EMCs for both pollutants were higher than corresponding baseflow MCs at both stations.

Table III-D2. Mean of storm EMCs and baseflow concentrations (mg/L) at Stewart-April Lane Tributary and Paint Branch, 2002-2005.

Parameter	Storm EMC		Baseflow	
	Stewart-April Lane Tributary	Paint Branch	Stewart-April Lane Tributary	Paint Branch
Total Nitrogen	1.631	2.165	2.484	3.044
Total Phosphorus	0.155	0.327	0.014	0.021
TSS	67.5	319.4	7.3	5.2
Zinc	0.058	0.052	0.014	0.006
Copper	0.031	0.024	0.011	0.008

Biological and Habitat Monitoring

Pre-construction Period

To date, DEP has seven years of pre-construction data at the Stewart-April Lane tributary station (PBPB104) and four years of data at mainstem lower Paint Branch stations PBPB309B (upstream of the tributary) and PBPB310A (downstream of the tributary). As shown in Table III-D3, this includes results for fish 1995 and benthic macroinvertebrate sampling for 1995 and 1996 for PBPB104, and fish and benthic macroinvertebrate sampling for 2001, 2002, 2003, 2004, and 2005 for all three stations. Detailed analysis is deferred until after retrofit construction is complete.

Table III-D3. Biological Results for Long-Term Discharge Characterization

YEAR (Pre-Construction)	PBPB104 Tributary		PBPB309B Upstream		PBPB310A Downstream	
	Fish	Benthic	Fish	Benthic	Fish	Benthic
1995	No Fish	X				
1996		X				
2001		X				
2002	No Fish	X	X	X	X	X
2003	No Fish	X	X	X	X	X
2004	No Fish	X	X	X	X	X
2005	No Fish	X	X	X	X	X

Table III-D4. shows the rapid habitat assessment parameters that scored less than good at each station. The rapid habitat assessment rated overall "Good" at PBPB309B and PBPB310A, and dropped from an overall "Good" from 2004 to a "Good\Fair" in 2005 for the tributary PBPB104. The tributary station PBPB104, has a declining bank stability score along with a declining instream cover score which would account for change in overall narrative. Figure III-D4. is a graphical comparison of the habitat ratings with those for the biological community for the 2005 sampling. The benthic macroinvertebrate community was fair for PBPB309B and PBPB310A, and "Poor" for PBPB104. While the fish community was good for both PBPB309B and PBPB310A, there were no fish caught in PBPB104 and a resulting poor rating.

Table III-D4. Rapid Habitat Assessment Parameters with Low Scores for Long-Term Discharge Characterization.

PBPB104	**Stewart April Lane Tributary** Instream cover (4 out of 20), Bank Stability (2 out of 10)
PBPB310A	**Paint Branch mainstem, downstream of PBPB104 confluence** Bank Vegetation (4 out of 10) Right Bank Stability (scored 4 of 10)

Figure III-D4. Long Term Discharge Characterization. Biology and Habitat Conditions.Line shows expected direct correspondence between biological and habitat conditions.

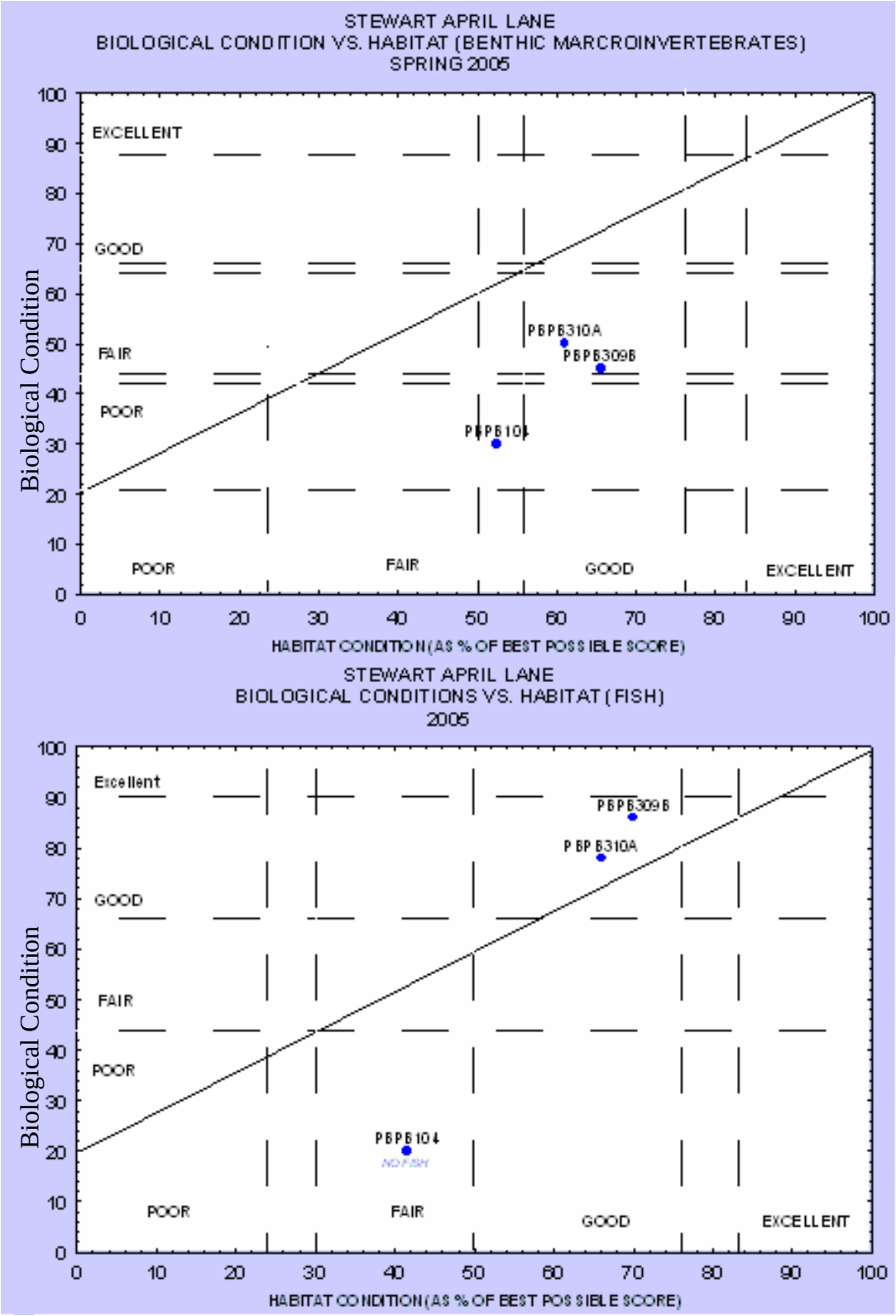


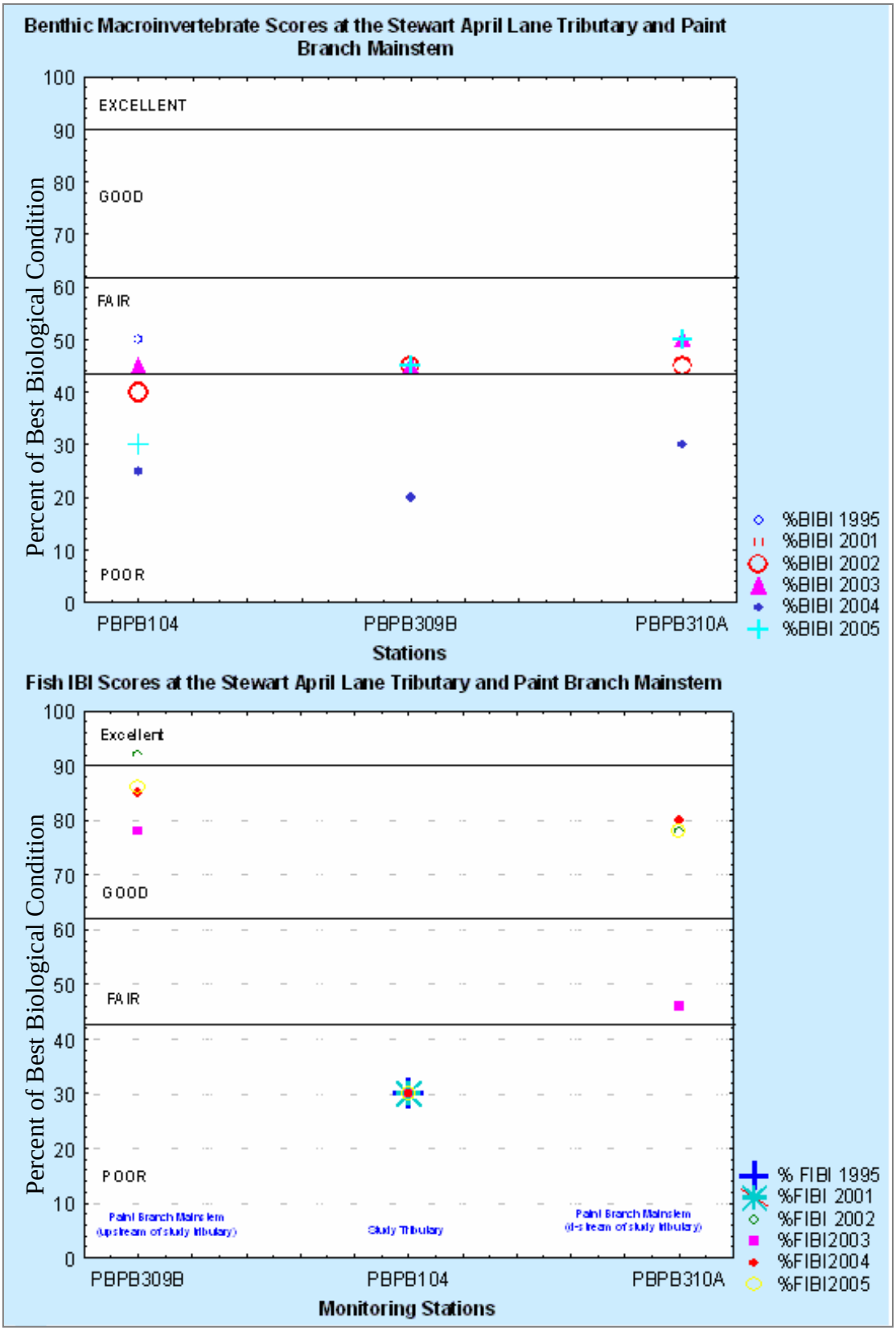
Table III-D5 shows results from the water chemistry and physical parameters monitored at the time of the biological sample collections. The conductivity values during the spring and fall in the Stewart-April Lane Tributary were higher than at the tributary station of PBPB104. There was also some dissolved oxygen depletion in the summer with 77% saturation during, compared to a desired >80% saturation. The DO probe failed the day benthic macroinvertebrate monitoring occurred in the mainstem stations.

As shown in Figure III-D5., PBPB104 remained "Poor" in the benthic macroinvertebrate community, while PBPB309B and PBPB310A improved to "Fair" in 2005 from the "Poor" rating in 2004. The fish community rating remained the same for station PBPB310A and PBPB309B as "Good". PBPB104 remained "Poor" as another year with no fish caught.

Table III-D5. Water Quality Measurements at Biological Monitoring Stations
Values in blue are unusual readings for this site.

STATION	**PBPB104 (tributary)**		**PBPB309B (upstream)**		**PBPB310A (downstream)**	
TYPE:	Benthic	Fish	Benthic	Fish	Benthic	Fish
DATE :	3/15/2005	10/19/2005	3/15/2005	10/19/2005	3/15/2005	10/19/2005
Dissolved Oxygen (> 5 mg/l)		7.76		10.07		9.51
% Dissolved Oxygen Saturation		77		96		90
PH (6.5-8.5)	7.09	6.89	7.5	7.1	7.22	7.11
Conductivity (<= 300 umhos)	550	579	282	170	297	180
Air Temperature (deg C)	16	25	16	24	16	19
Water Temperature (deg C)	7	15.8	6.2	13.5	5.9	12.8

Figure III-D5. Long-Term Discharge Characterization Comparison of Biological Community
(B=Benthic; F=Fish; IBI=index of biological integrity.)



Benthic Community Structure and Function Differences

Eight measurements of community structure and function make up the DEP's Benthic Index of Biological Integrity (BIBI). These include functional feeding groups (FFGs), taxa richness, diversity, composition, and pollution tolerance. Each measurement responds in a predictable way to increasing levels of stressors. Examining the details of the benthic communities provides more information on possible impairing factors than available just from the BIBI score.

Functional Feeding Groups

The FFG classifications are ecological classifications that distinguish benthic macroinvertebrates based on how they process food (Camann, 2003 and Cummins in Loeb and Spacie, 1994). The five FFGs usually examined in a bioassessment are collector gatherers, filtering collectors, shredders, scrapers, and predators. Collectors are the most generalized and usually most abundant FFG because their food source of fine particulate organic matter is abundant. Shredders reduce coarse material (like leaves) into fine material which can then be transported downstream for use by collectors. Shredders actually use the fungi and bacteria present on leaf surfaces for food, breaking the leaf into smaller fragments in this process. Other FFGs include scrapers and predators. Scrapers scrape and graze on the diatoms and on other algae that grow attached on exposed surfaces. Predators attack and consume other insects and macroinvertebrates.

The FFGs in the Stewart-April Lane tributary (PBPB104) are compared to those in Gum Springs (PBGS111) for 2004 and 2005 in Figure III-D6. The Gum Springs station is in a first order stream in the Upper Paint Branch, with significantly less contributing impervious area than in the Stewart-April Lane tributary (less than 15% versus about 39%). The BIBI ranking in the Gum Springs has been consistently in the good range since it was first monitored.

In 2005, the benthic macroinvertebrate community at PBPB104 was comprised of 62% Collectors, 24% Predators, 9% Shredders, and 4% Filterers. In contrast the PBGS111 station was composed of 25% Collectors, 23% Scrapers, 19% Shredders, 18% Filterers, and 10% Predators. The dominant FFGs in first order headwater streams are typically shredders and collectors. This is definitely the dominant group in PBPB104, and at PBGS111 it is as well. Note also that both stations show significant change in the Functional Feeding groups from 2004 to 2005.

The FFGs diversity at the Paint Branch mainstem stations (PBPB309A and PBPB310B) is shown in Figure III-D7. for both 2004 and 2005. The FFGs composition were as expected for this size stream with collectors the dominant category in both years. Collectors and scrapers are the expected dominant FFGs in higher order streams. As seen in the graphs below the dominant FFG for the PBPB109B station is the Collector and Shredder. This is a significant change from 2004 when 90% was Collector compared to 34% in 2005. In the downstream station PBPB310A, the most dominant groups this past year were the Shredder and Predator, in comparison to 2004 when 96% was Collector. Both sites show significant change in functional feeding group communities from year to year.

Figure III-D6. Comparison for 2004 and 2005 by percent functional feeding groups in twofirst order Paint Branch streams. (Stewart April Lane Tributary: 39% impervious, Benthic Index of Biological Integrity poor. Gum Springs Tributary: less than 15% impervious, Benthic Index of Biological Integrity fair.)

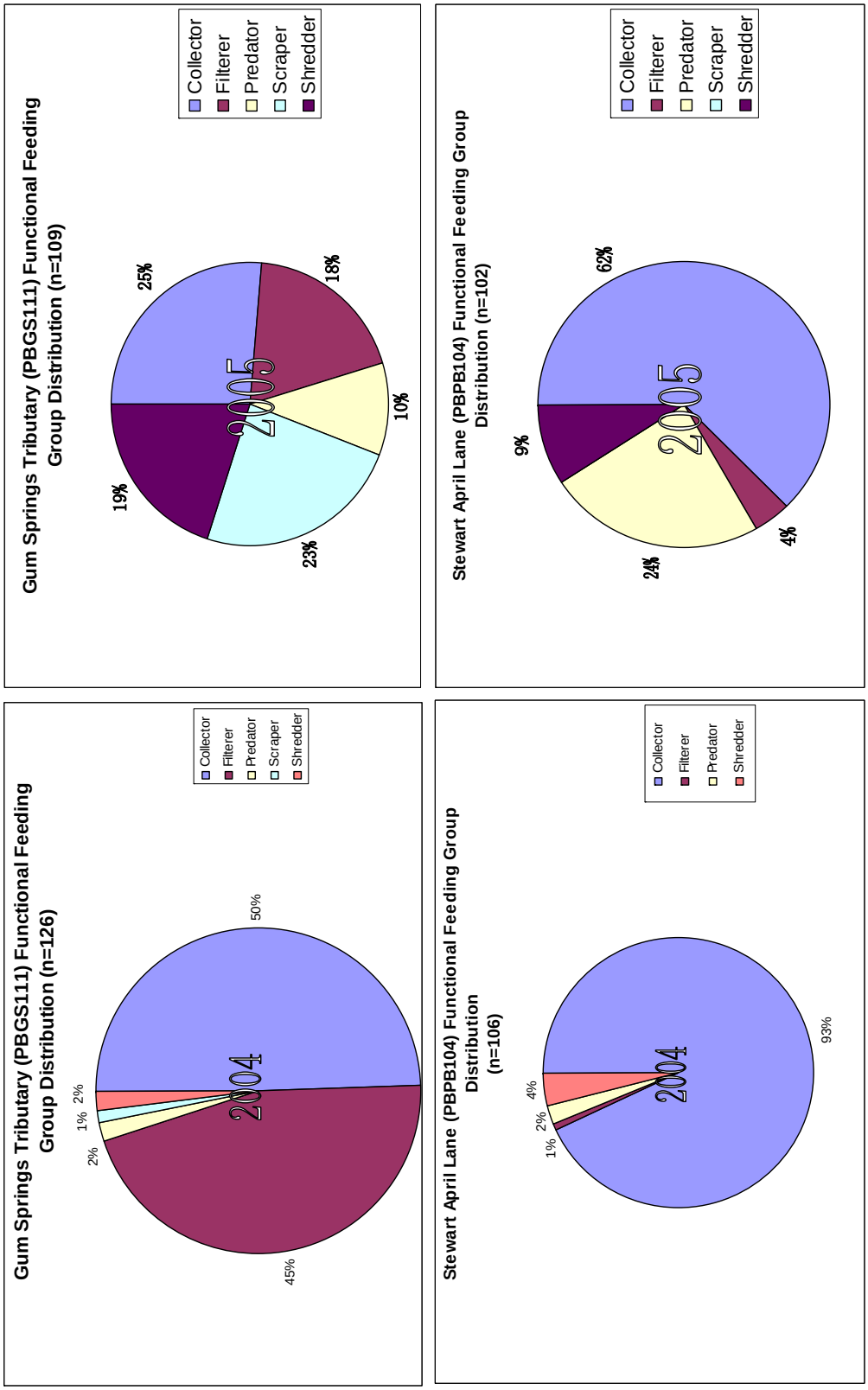
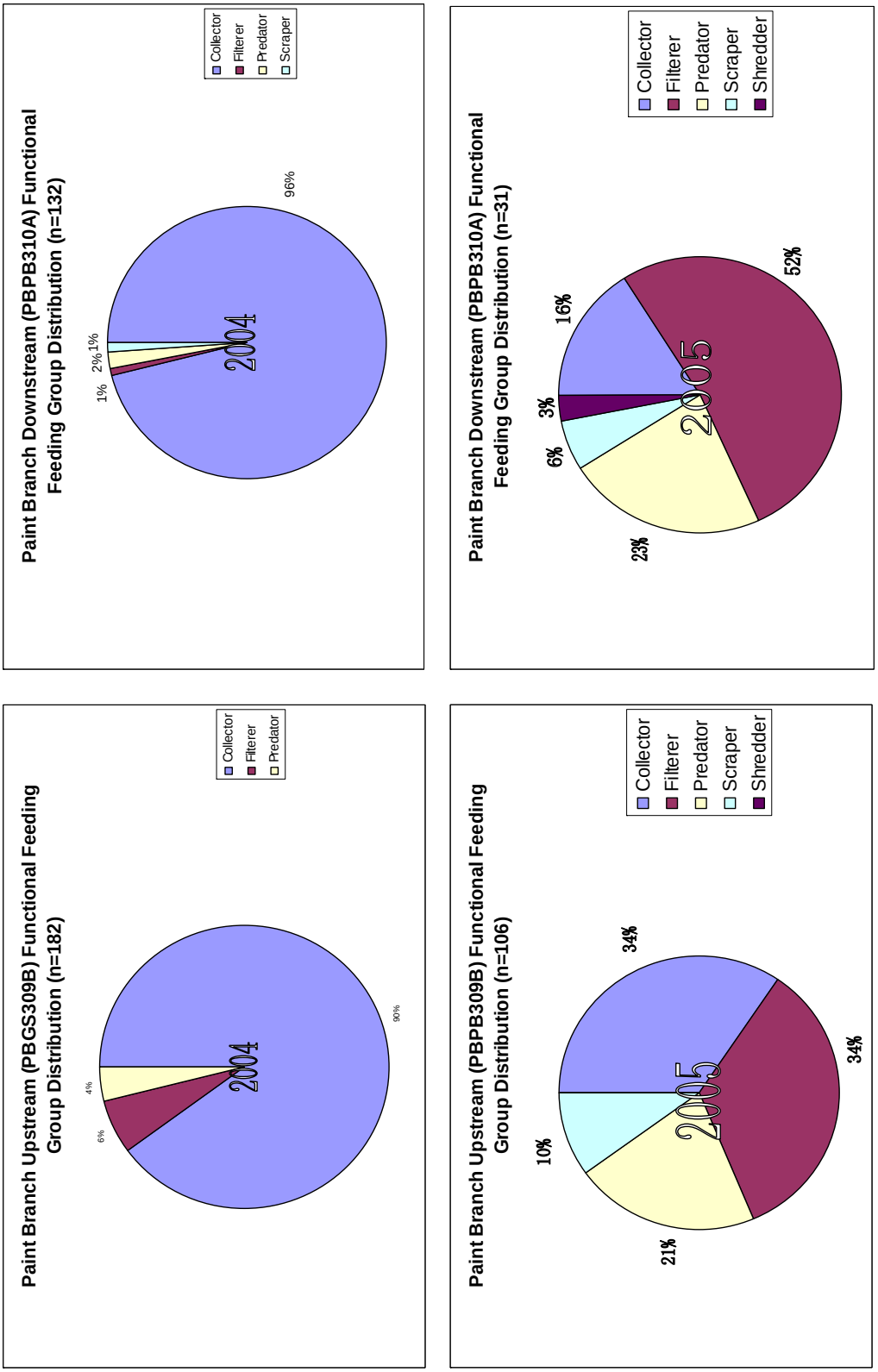


Figure III-D7. Comparison for 2004 and 2005 by percent functional feeding groups in mainstem Paint Branch upstream and downstream of the Stewart-April Lane Tributary.
(Percent watershed impervious is about 13%. Benthic Index of Biological integrity is fair at both stations.)



Taxa Richness

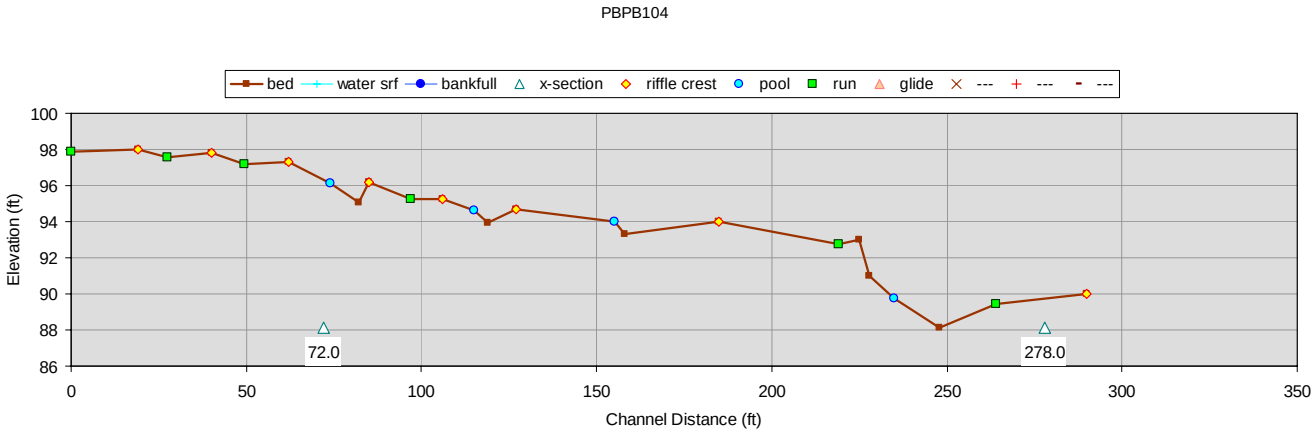
Taxa richness reflects the number of different taxa found at a station, with more taxa showing a more diverse community. The average number of taxa found in the Stewart-April Lane tributary and in Gum Springs has increased over the last year. The number of taxa increased from 10 to 11 at the Stewart-April Lane tributary and from 13 to 18 taxa in Gum Springs at PBGS111. The number of taxa in Stewart-April was consistently lower than that in Gum Springs and also less than in the mainstem station. There were 24 taxa found upstream and 12 taxa found downstream of the Stewart-April Lane tributary.

Physical Stream Assessment

The Permit requires the County to conduct a geomorphologic stream assessment between the outfall and instream monitoring station. To examine stream morphology in the Stewart-April Tributary, the County has completed a longitudinal profile, two cross sections, pebble counts, sinuosity measurements, and slope calculations. Methods for this stream morphology study are the same as those found in the Stormwater Design Manual criteria section. These are preliminary results based on only two years of monitoring. When the retrofit is completed, another stream morphology survey will be conducted and more detailed analysis of the data will be completed.

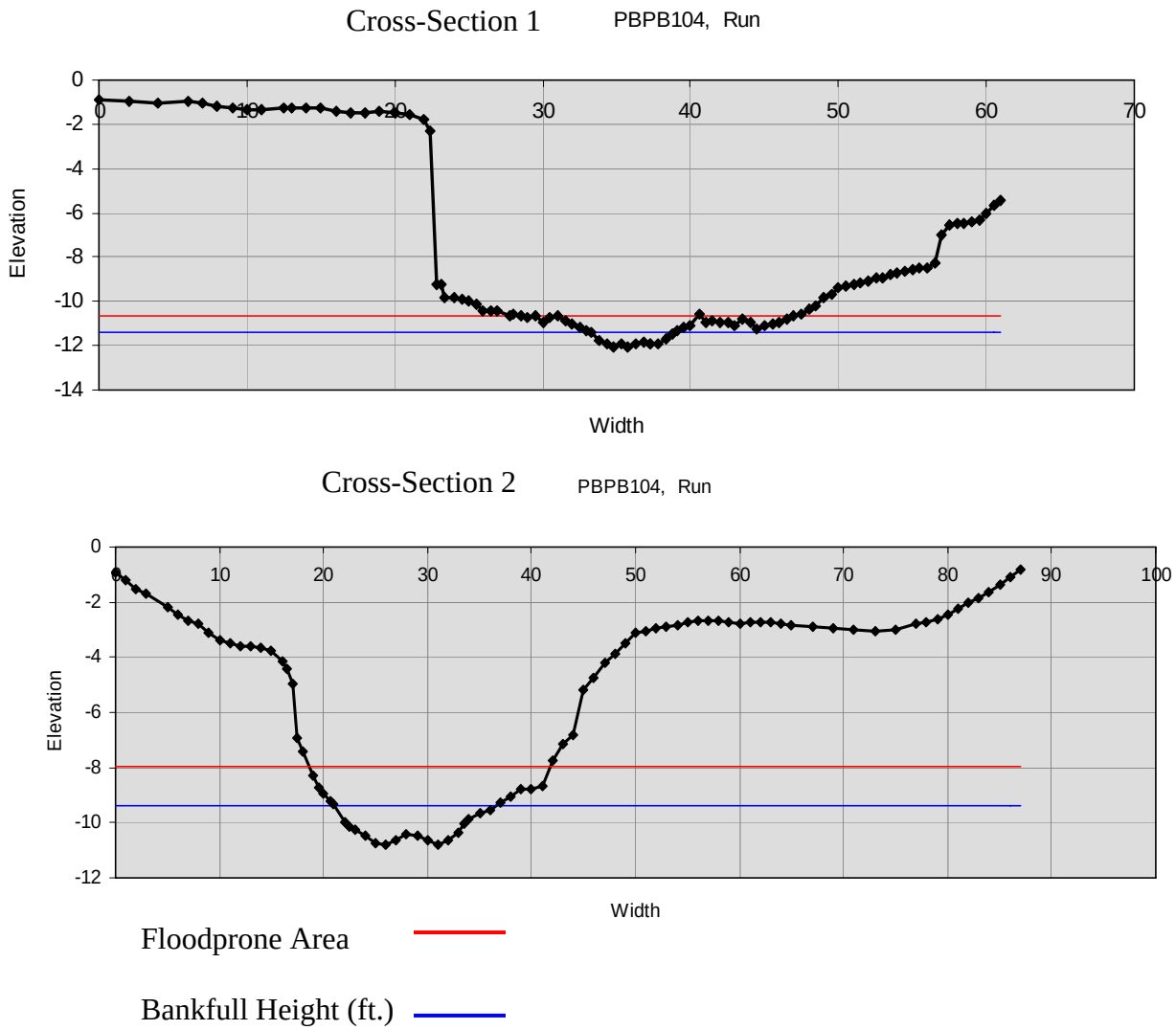
The longitudinal profile is shown in Figure III-D8. for a total length of 290 feet (20 bankfull widths). A reading was recorded at the start of each fluvial type, in addition, the maximum depth of the pools were recorded.

Figure III-D8. Longitudinal profile of Stewart-April Lane Tributary for 2005



Two cross sections have been established, one in a straight run and the other on a bend. Results are shown in III-D9. for both cross section 1 (straight run) and 2 (on a bend).

Figure III-D9. Cross-Sections for Stewart-April Lane Tributary



D2. Stormwater Design Manual Monitoring

The purpose of the Permit-required monitoring is to describe the effectiveness the 2000 Maryland Stormwater Management Design Manual criteria in protecting the stream channel morphology. The locations, watershed character of the "control" and "test" subwatersheds, and protocols were described in the NPDES report for 2003. The control subwatershed is Soper's Branch (LBSB101) which has stable, largely forested watershed character. The Permit requires monitoring of only stream cross-sections and longitudinal profiles, but the DEP is also monitoring other stream features which may be affected by development-related changes in hydrology (such as pebble counts) as well as water temperature and stream benthic and fish community.

The test subwatershed of Little Seneca 104 tributary (LSLS104) has been undergoing rapid land conversion since 2002. During the 2005 year, the eastern portion was in the third phase of development. Portions of the development became owner-occupied while further downstream on the eastern side forests were cleared, land grading continued, and more houses began to take shape. The sediment and erosion control devices on the eastern side of the test area have not yet been fully converted to post-construction stormwater control. To the west, the first clear-cutting of the forests and land grading began.

Preliminary Conclusions

The analysis to date pertains to sediment and erosion devices as full conversion to post-construction stormwater management BMP had not occurred in 2005. The observed impacts on stream morphology and biology during construction may not persist after land cover is stabilized. Results of analysis on stormwater management effectiveness will begin after five years of post-construction monitoring in the test subwatershed have been completed. Graphical and table summaries of data collected to date are included on CD in Attachment A.

Prelimary results show the test and control tributaries respond differently to varying rainfall amounts. During smaller rainfall events, the flows in the control tributary are higher while in heavier rainfalls, the test tributary is higher. Data from the sediment and erosion controls at the test tributary will be examined in subsequent Permit annual reports to better understand the capacity for control during heavier rainfalls.

Flows from the more frequent storm events are ones that typically reshape the stream's morphological features. Even the control tributary has changed over the past three years despite little or no human influences on watershed character. The majority of these morphological changes in the tributaries seem not to drastically affect the overall stream slopes or meandering patterns; however, changes in the fluvial features and cross sectional topology do occur. Most topological changes occurred at or below the one and a half year storm events. Even with those changes, the test's and control's streambed composition remained the same at all of the areas except in control area 4, whose surface shifted back from silt/clay to a gravel (medium) particle size. Though the particle size in the control area 4 shifted, the overall cross sectional areas did not change. Furthermore, for the past three years, there appears to be no correlation between the changes in pebble size and cross sectional areas.

The biological communities in the test tributary continue to show signs of stress from the initial impacts of the development on the eastern side of the test tributary (Greenway Village). Preliminary 2006 results depict a degradation in the bug communities most likely due to the construction operations now underway on the western side of the tributary.

Currently, water temperature does not seem to be a factor in any biological stream impairments in either the control or test tributaries. It should be noted that control area 2 had almost completely dried up in the summer of 2005 but the water temperature found in the pool where the temperature logger was deployed remained within a tolerable temperature range for fish and aquatic insect survival. Most likely, the forest buffer and spring seeps are the predominate contributors to regulating the summer water temperatures in the control tributary. With the rapidly developing test tributary, water temperature may play a larger role in the aquatic biota's survival due to land disturbances that may alter tree canopy and/or spring seeps.

Hydrology

TR-20 Study

The Permit requires that a hydrologic and/or hydraulic model shall be provided to determine the effect of the ultimate build-out on runoff characteristics in the test watershed. The study is included on CD in Attachment A. The study used the TR-20, Project Formulation Hydrology, existing and proposed conditions, with and without BMP controls, to determine peak runoff values for storm event frequencies of from 1-year to 100-year. The scenario without stormwater management showed increases in flow over existing conditions.

However, the build-out conditions with stormwater management, even with conservative assumptions, showed a decrease in runoff over existing conditions except for the 100-year storm. The consultant has determined 'that the combination of extended detention storage ponds plus a net decrease in drainage area' accounts for the model results. The DEP will follow changes in runoff volumes and pattern at the existing flow gauge to determine if these model predictions are accurate.

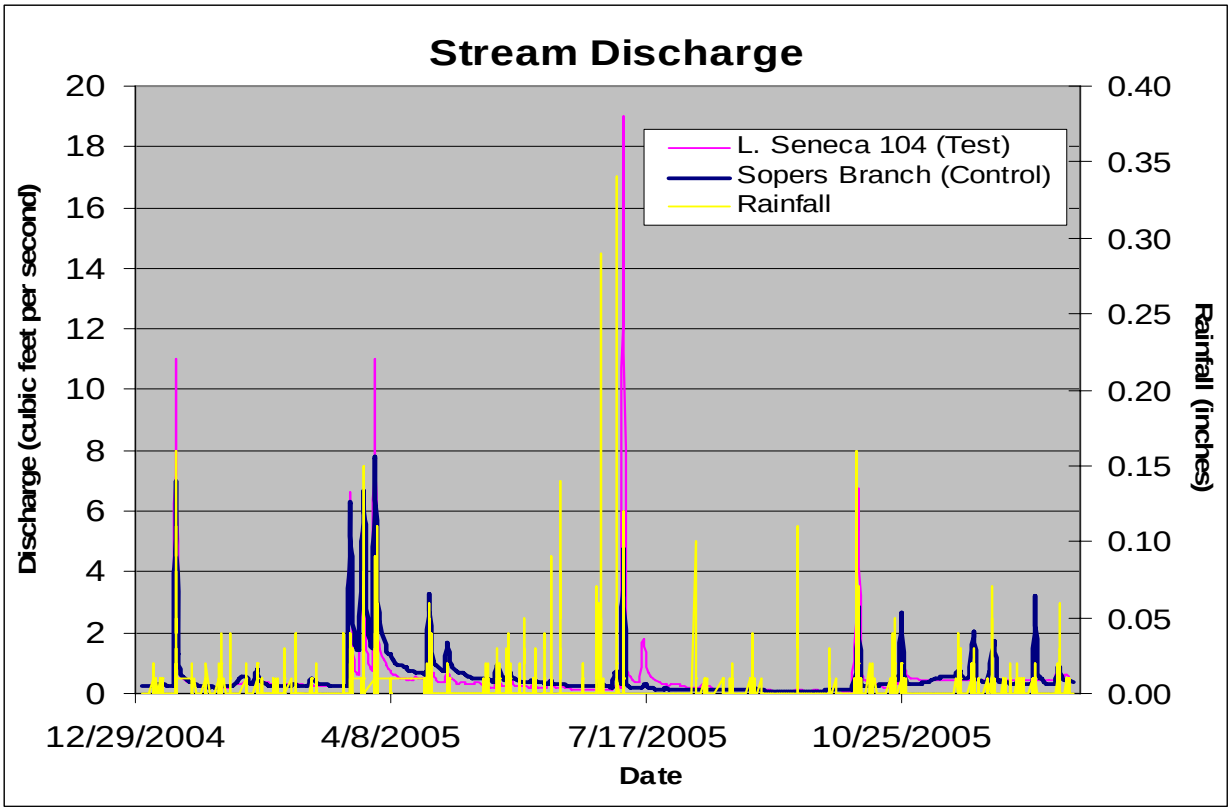
Table III-D6. TR-20 Hydrology Model Results for LSLS104 (test subwatershed)

Condition	Q1 cfs	Q2 cfs	Q5 cfs	Q10 cfs	Q100 cfs
existing	106.3	194.9	354.6	592.0	1060.0
developed without SWM	147.2	236.1	403.3	543.8	1150.3
developed with SWM	35.3	72.3	198.9	455.2	1075.9

Relationship between rainfall and flow gages

The DEP is in a cooperative relationship with the United States Geological Survey (USGS) to maintain the flow gauges in both the control and test subwatersheds. The USGS presented the preliminary rating tables for these flow gauge stations in 2006. For a preliminary comparison, the relationship of two types of rainfall events (>2 inches and <1 inch of rain) on the two streams depict that the test area responds greater to larger rainfall while the smaller rainfalls are more visible in the control tributary, Figure 1. In Figure 1, the discharge for the control tributary was compensated for the comparison to the test tributary's drainage area. The County is beginning to analyze the differences in the stream's response to different rainfalls.

Figure III-D10. Test and Control Area Stream Responses to Rainfall during 2005.



Cross-Sections

As noted in the 2004 report, both the control and the test streams show change within the monitored cross section. The thalweg, deepest portion of the stream, is shown to have decreased due to deposition, and in other portions have increased due to scouring of the streambed. The DEP has marked the elevation of the one and a half year frequency storm event with rebar so that changes in the cross sections can be compared to the storm volumes that produce the channel changes.

It appears that most, if not all, of the channel changes occur at elevations at or below the frequent storm level for both the control and test subwatersheds. The DEP will continue to examine the relationship between the one and a half year storm events and stream morphological changes. The total cross sectional areas for both the test and control subwatersheds are shown in Table 1.

Table III-D7. Total Cross Sectional Areas for the Test and Control Subwatersheds.

Year	Cross Section 1 Area (ft^2)				Cross Section 2 Area (ft^2)			Cross Section 3 Area (ft^2)			Cross Section 4 Area (ft^2)		
	'02	'03	'04	'05	'03	'04	'05	'03	'04	'05	'03	'04	'05
Test Area 1	85	85	86	85	169	173	174	n/a	n/a	n/a	n/a	n/a	n/a
Test Area 2	94	84	86	85	189	188	182	n/a	n/a	n/a	n/a	n/a	n/a
Test Area 3	45	44	44	43	59	57	57	71	76	71	31	25	26
Test Area 4	62	62	58	53	58	34	39	46	54	54	n/a	n/a	n/a
Control Area 1	n/a	55	57	60	134	142	142	n/a	n/a	n/a	n/a	n/a	n/a
Control Area 2	n/a	38	38	38	72	60	59	n/a	n/a	n/a	n/a	n/a	n/a
Control Area 3	n/a	114	121	115	161	169	169	77	84	83	n/a	n/a	n/a
Control Area 4	n/a	65	68	66	54	56	56	n/a	n/a	n/a	n/a	n/a	n/a

Additional Analyses

Photo Documentation

As seen in the previous report, photo documentation can be extremely helpful in examing stream changes. In 2005, the water level in the streams were extremely low during most of the monitoring. In fact, Area 2 of the control area was completely dry as shown in Figure III-D11.

Figure III-D11. Soper's Branch (LBSB101) Control Area 2 Cross Section 1. Facing Upstream. 2003-2005.

In test area 4, the stream cross-section has not changed drastically. As shown in Figure III-D12., a tree was found downed in the stream during 2005, just downstream of cross section 1. The blockage does not affect baseflow, but may have an impact during a flood event.

Figure III-D12. Little Seneca (LSLS104) Test Area 4 Cross Section 1. Facing Downstream. 2002-2005.

Biology

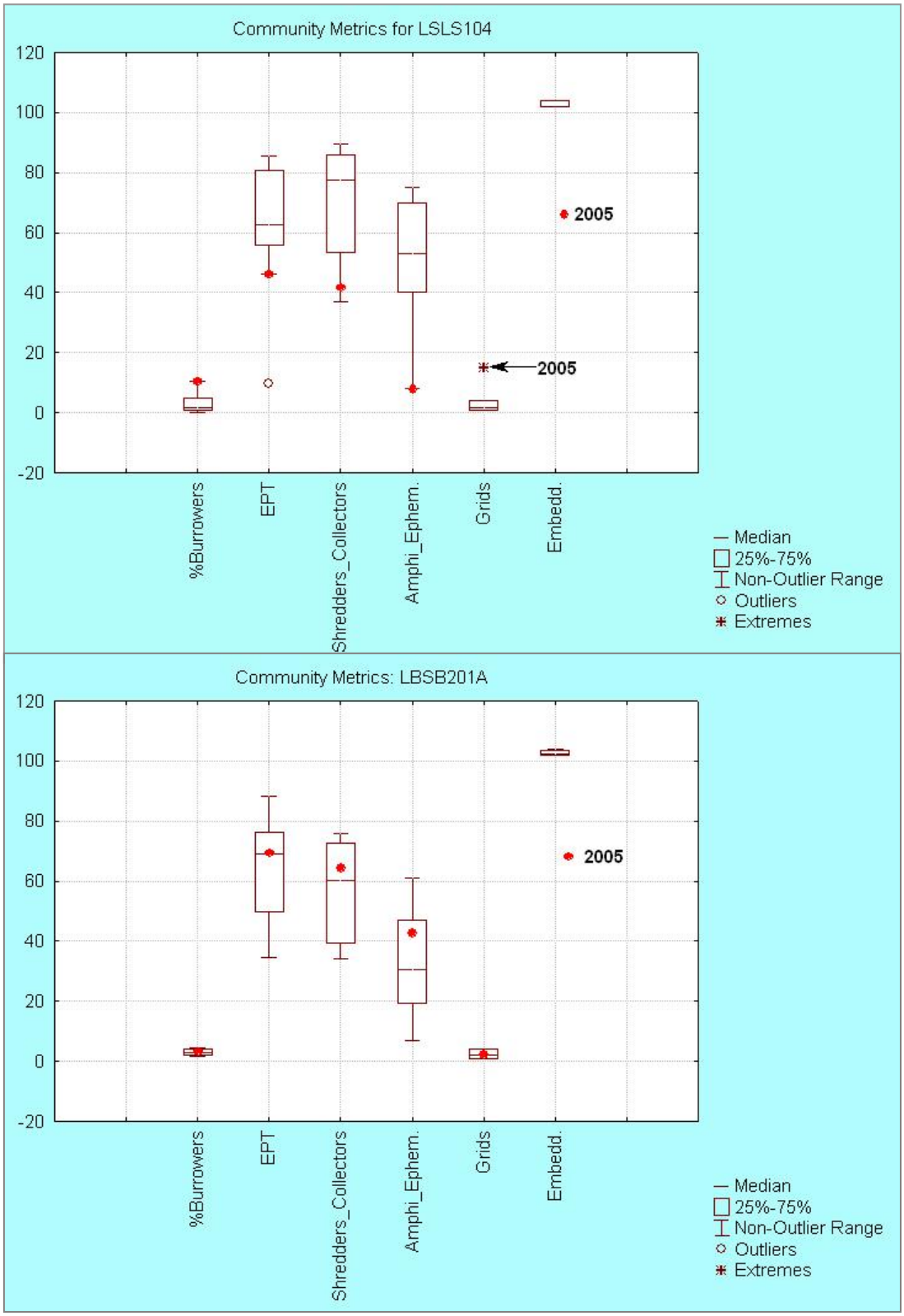
In past reports, the IBI scores for the test and control tributaries were used to track to changes in the biological communities. Often it is useful to examine specific characteristics of the composition of the biological community to document changes in the overall community structure or function as clues to long-term changes in stream habitat or quality.

Table III-D8. shows a summary of benthic and fish community conditions by year in the Control and Test areas. In 2005, the test area appeared to show an improvement in the benthic community, "good" compared to "fair" during 2004. Further examination of the community characteristics however showed that organism abundance remained low compared to the control tributary. As shown in Figure III-D13., the percent of sensitive taxa (EPT) and functional feeding group (usually dominant in headwater streams) decreased in the test tributary . At the same time, the percent of burrowers (organisms found in soft bottom stream substrates) increased. While there are not as many years of data available as for the benthic community, there appears to be an overall increase in the fish community health in both the test and control tributaries.

Table III-D8: Biological Monitoring Conditions at the Control and Test Areas..
(n/a =not available).

Year	2000	2001	2002	2003	2004	2005
Station LBSB201A (control)						
Benthic Rating	Good	n/a	n/a	Excellent	Excellent	Excellent
Fish Rating	n/a	n/a	n/a	Good	n/a	Excellent
Station LSLS104 (test)						
BenthicRating	Good	Good	Good	Good	Fair	Good
Fish Rating	Fair	n/a	n/a	Fair	n/a	Good

Figure III-D13: Details of the Benthic Communities at the Test(LSLS104) and Control (LBSB101)Subwatersheds .



E. Management Programs

E1. Stormwater Management Program

Facility Inspections and Maintenance

In 2005, the DEP performed 1,145 initial inspections to assess the repair and maintenance needs of a stormwater management facility. Of the 1,145 inspections, 959 were at privately owned facilities and 186 were at publicly owned facilities. Table III-E1. shows the total number of initial inspections by facility type and ownership.

Table III-E1. Total Number of Initial Inspections by Facility Type and Ownership during 2005.

Structure Type	Privately Owned	Publicly Owned	Total
Aquaswirl	5	0	5
Baysaver	9	0	9
Bioretention	9	0	9
Constructed Wetland	26	2	28
Control Structure	5	0	5
Dry Pond (Detention)	108	15	123
Flow Splitter	67	8	75
Infiltration Basin	7	1	8
Infiltration Trench	47	11	58
Oil/Grit Separator	322	100	422
Oil/Grit Separator and sand filter	43	3	46
Pond/Sand Filter	10	0	10
Sand Filter	47	6	53
Stormceptor	94	27	121
StormFilter	7	1	8
Underground Infiltration Trench	11	0	11
Underground Sand Filter	5	0	5
Underground Storage	102	4	106
Underground Storage with infiltration	1	0	1
Wet Pond (Retention)	34	8	42
Grand Total	**959**	**186**	**1145**
Total Repairs (percent of all inspected)	*450*	*76*	*526 (46%)*
Total Aboveground with Repairs (percent of this type inspected)	*284*	*37*	*321 (91%)*
Total Underground with Repairs (percent of this type inspected)	*166*	*39*	*205 (26%)*

The majority of the inspections occurred at three structure types-- oil-grit separators (422), dry ponds (123), and Stormceptors (121)[1]. A majority of the inspections were completed by DEP's contractor under the Stormwater Facility and Inspection Support contract, although a few inspections were completed by DEP's Stormwater Inspectors or Senior Engineer. These initial inspections identified need for repair at approximately 46% of all structures--about 91% of the aboveground structures and 26% of the underground structures. In contrast, during 2004, initial inspections identified some sort of repair was needed at 88% of the aboveground structures and 39% of the underground structures.

Aboveground facilities include ponds, infiltration trenches, infiltration basins, filtration basins, and filtration devices (bioretention and surface sand filter). Underground structures include all structures located physically underground such as oil-grit separators, underground sand filters, underground infiltration, and underground storage facilities. In 2005, there were 387 inspections at aboveground facilities and 74 inspections at belowground facilities related to public complaints, to follow-up inspections, and inspections at facilities being considered for transfer into the DEP's Stormwater Facility Maintenance Program (SWFMP). After the initial inspection, DEP's stormwater facility inspectors on average complete two follow-up inspections per aboveground facility and one follow-up inspection per underground facility to ensure the facility is properly repaired and maintained. In addition, DEP's inspectors perform a final inspection for each facility once repairs and maintenance are completed. This inspection is completed to ensure the facility is in compliance and is available for transfer in the SWFMP. Maintenance other than grass cutting and trash removal is funded through the Water Quality Protection Charge for facilities in the SWFMP.

Aboveground Facility Inspections

The number of initial inspections of aboveground facilities in 2005 was 351. Of these, 307 were at privately owned and 44 were at publicly owned facilities. Repairs were made at 321 facilities; 20 required immediate repairs. The DEP inspection program provided final inspections at 140 of these facilities. Fifteen of the privately owned facilities have been accepted for transfer into the DEP program.

Belowground Facility Inspections

The number of initial inspections of belowground facilities in 2005 was 794--652 at privately owned and 142 at publicly owned facilities. Repairs were made at 205 facilities; five required immediate repairs. The DEP provided final inspections at 655 of these--534 privately owned and 121 publicly owned facilities. Seven of the privately owned facilities have been accepted for transfer into the SWFMP.

[1] In previous years, DEP was inspecting all infiltration trenches on an annual basis due to their high rate of failure. After analyzing the results from those inspections, DEP determined that aboveground infiltration trenches can return to a triennial inspection schedule. Hence, the removal of infiltration trenches from the top three structures types inspected in 2005.

Stormwater Management Ordinance and Implementation

The permit-required information on stormwater management concept plans approved during the reporting year is shown in Table III-E2 and included in the database on the CD in Attachment A. The number of sediment control permits decreased in 2005 as did the total developed acres and the amount of land served by stormwater management facilities.

Onsite treatment is normally required for circumstances where the lots are large enough to accommodate nonstructural controls without adversely affecting neighboring properties. In existing residential neighborhoods, new houses are being constructed on a large number of either infill lots or lots in which the existing house will be demolished and replaced by a new house. Since houses already exist on surrounding lots and infrastructure is already in place, onsite stormwater management may be impractical for smaller lots.

Table III-E2. STORMWATER PROGRAMMATIC INFORMATION

Permit Condition/Year	2001	2002	2003	2004	2005
GP_NUM	886	890	912	962	779
PRJ_NUM	231	190	252	219	249
REDEV	35	26		29	28
EXEMPT	59	27	0	0	0
QP_2	52	37	0	0	0
CP_V	0	5	3	7	11
H2O_QUAL	31	40	9	8	5
RED_WAV QP_2	23	8	0	0	0
RED_WAV CP_V	0	7	2	8	13
RED_WAV H2O_QUAL	10	4	0	3	5
FEES_TOT	$1,183,587	$1,200,484	$910,213	$504,806	$638,619
ACRE-DV	2125	1390	1466	1498	1414
ACRE-TR	1256	1122	1382	1437	1367

Notes:

1. GP_NUM = Number of Sediment Control Permits Issued
2. PRJ_NUM = Total Number of New Preliminary Plans Received, including those that are exempt or for which full or partial waivers were granted
3. REDEV = Redevelopment Projects
4. QP_2 = Number of New Projects Which Received Full or Partial Waivers of Two Year Stormwater Management Requirements
5. CP_V = Number of New Projects Which Received Waivers of Channel Protection Volume Storage Requirements
6. H2O_QUAL = Number of New Projects Which Received Waivers of Quality Management Requirements
7. RED_WAV = Number of Redevelopment Projects Which Received Waivers (Based on Same Type of Waiver as for New Development)
8. FEES_TOT = Waiver Fees Are Required Where Waivers Are Granted. They Are Collected at the Time Building Permits Are Requested. Therefore, the Number of Fee Collections is Inconsequential.
9. ACRE-DV = Acres Developed (Based on Issued Sediment Control Permits)
10. ACRE-TR= Acres Served by Stormwater Management Facilities (Based on Approved Stormwater Facilities which are included in issued Sediment Control Permits)
11. FEES_TOT = Waiver Fees Are Required Where Waivers Are Granted. They Are Collected at the Time Building Permits Are Requested. Therefore, the Number of Fee Collections is Inconsequential.

Much of the time, the concern is not how to treat or infiltrate runoff but how to convey it safely away from neighboring properties. In these cases, the previous exemption has been verified and the stormwater management requirement has been satisfied through fee payment. During 2005, there were 279 such cases on small, existing residential lots that were created prior to enactment of the first stormwater management laws.

The majority of collected stormwater management waiver fee dollars pertain to waivers of channel protection volume (CPv) requirements for commercial redevelopment projects. The MDE does not require CPv for redevelopment but the County does. Therefore, if the County waives the CPv for a redevelopment project, it is not waiving the project of any State-mandated stormwater management controls.

The amount of fees collected in 2005 are slightly higher than for 2004 but significantly less than in prior years. This does not indicate a reduction in redevelopment activities. The reduction in fees is related to the minimum release rate the MDE manual says is required for onsite channel protection structures. Sites which produce less runoff are exempt from providing channel protection measures. Many redevelopment sites produce less than the minimum rate of flow. Therefore, redevelopment projects that could be waived in past years with the collection of waiver fees are now exempt and no waiver fees can be collected. Water quality requirements are not waived.

Table III-E3 compares BMPs approved and implemented in 2005 by major County watersheds. This information is included in the database on the CD in Attachment A. During 2005, the number of BMPs remained the same or decreased slightly in all watersheds. Individual BMPs may be part of a treatment train, where runoff is initially treated by a filtration facility and then discharged into a pond for additional treatment. Some discrepancy in reporting nonstructural measures exists due to the lack of definition from MDE on whether to report the total number of individual measures for each site or to report the measures only once per site, regardless of individual numbers. For example, should each individual dry well constructed on a site be reported or should the BMP be listed for one nonstructural credit of the entire site, regardless of the actual number of dry wells? The 2005 data typically reflects the latter.

Table III-E3. STORMWATER IMPLEMENTATION INFORMATION FOR 2005				
CRITERIA/WATERSHED	MONOCACY	POTOMAC	ANACOSTIA	PATUXENT
POND	0	2	0	0
WETLAND	0	0	0	0
INFILTRATION	0	13	10	2
FILTER	0	99	41	16
OPEN _CHANNEL	0	0	0	0
OTHER	0	25	13	8
NONSTRUCTURAL	8	85	30	45
CPV_FAC	0	27	21	5
QP10_FAC	0	0	0	0
FLOWSPLITTERS	0	27	33	2

Notes:
1. For This Report CPV Means either Two Year Stormwater Management or One Year Extended Detention depending on when the stormwater management concept was approved.
2. "Other" Facilities Typically Include Those Not Approved By MDE as Meeting Full Water Quality Requirements

E2. Water Quality Program Enforcement

Outfall Screening during 2005

For the year 2005, the DEP screened a total of 100 outfalls with 37 having dry weather flows. The DEP focused on the outfalls that are contained within the drainage areas of biological monitoring sites that showed impairment due to factors not directly attributable to physical habitat degradation. Errors in outfall location or type as shown on the existing maps were reported and corrected in the GIS inventory. In addition, 10 new outfalls were identified and will be added to the electronic storm drain inventory.

Of the 37 outfalls found to have flows, 28 were identified as piped streams with varying degrees of flow. Nine were determined to have dry weather flows other than from piped streams. The DEP conducted field tests for chlorine, copper, detergents, pH, and total phenol. Of the nine outfalls with dry weather flow, five showed detergent above detection limit with all total phenol, chlorine and copper being below detection limits and pH being within the acceptable range. Source tracking for these outfalls was unsuccessful.

However, screening at the outfall of one piped stream in the lower Rock Creek watershed did reveal an accumulation of used motor oil in the water. Source tracking for this incident was successful and was traced back to an overflowing used oil tank located at Silver Spring Used Cars on Brookville Road in Silver Spring. The problem with the tank was corrected and approximately 50 gallons of used oil was removed and recovered from the stream by a spill contractor.

For the year 2006, the DEP will continue to focus on the reaches that were identified as having biological impairment not directly related to habitat. In addition to the required outfall screening parameters, the DEP will target specific reaches for subsequent toxicity testing during both dry weather flows and storm events. The toxicity screening proposal is included in Attachment A.

Outfall Screening Summary for 2001-2005

Figure III-E2. shows the distribution of the outfalls screened from 2001 through 2005. Table III-E4. shows the screening results . There were a total of 547 outfalls screened, with 102 showing dry weather flows (about 18.8%). Of those with dry weather flow, there were 34 (about 6%) requiring follow up investigations because water sampling showed one or more of the five indicator parameters above the method detection limits. The most common indicator was that of detergent, indicating washwater. The second most common indicator was that of chlorine, also an indicator of treated water either from the drinking water system directly (i.e. leaking pipes) or from swimming pools.

During 2004 and 2005, the monitoring focused on outfalls contained within the drainage areas of stations where the biology showed impairment by other than habitat which could indicate a water chemistry limitation. However, there was no change in the percentage requiring follow up based on the five Permit-required indicator parameters. The DEP intends to use the toxicity screening protocol to confirm the possibility of water chemistry impairment not related to the currently monitored suite of parameters.

Figure III-E1. Areas screened for Illicit Discharges and Illegal Connections from 2001-2005.

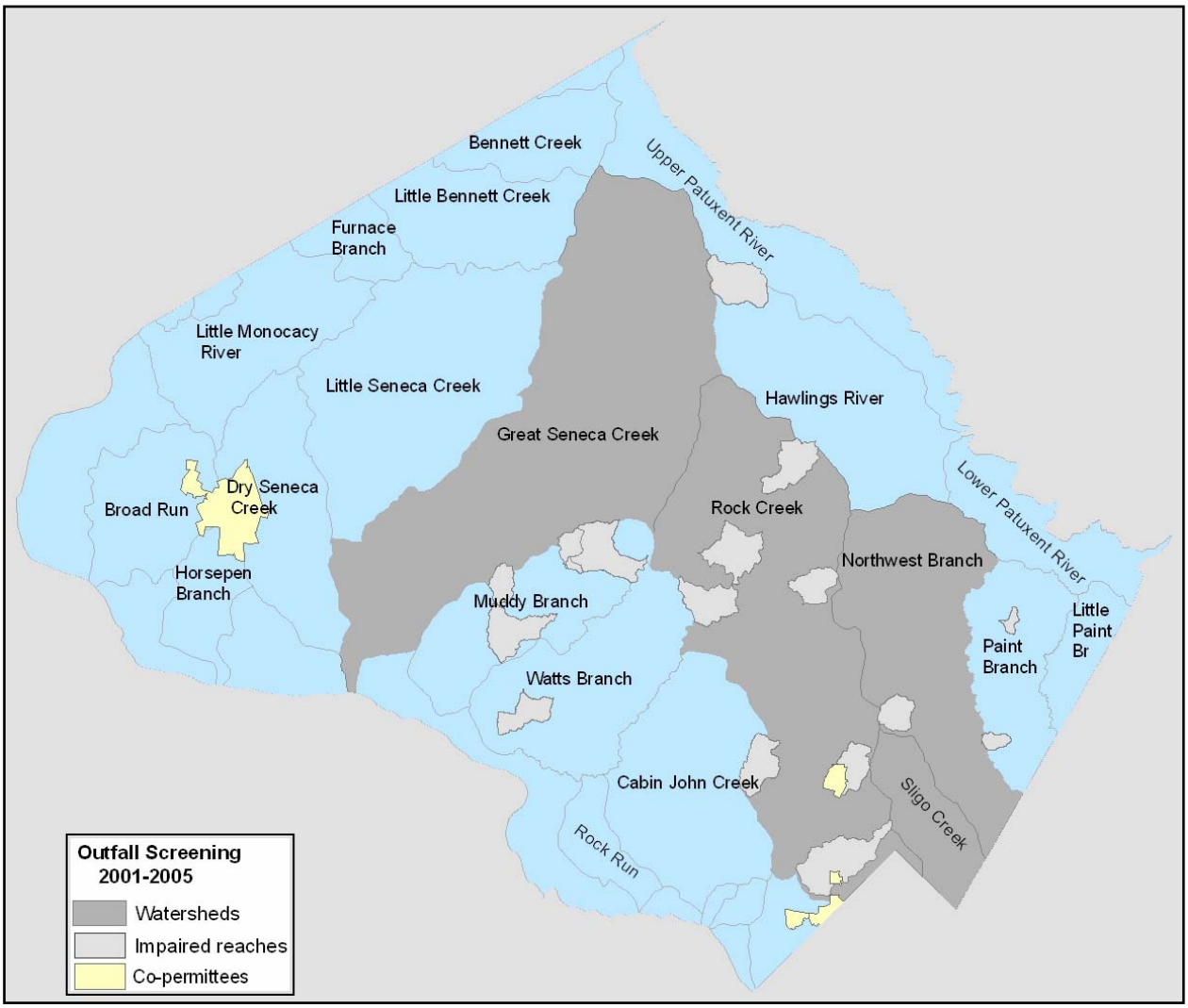


Table III-E4. Results from Outfall Screening 2001-2005.			
YEAR	**# of outfalls screened**	**# with dry weather flow**	**# requiring follow up**
2001	111	8	7
2002	111	16	9
2003	101	18	4
2004	124	23	9
2005	100	37	5
TOTAL	547	102 (18.8% of total)	34 (6% of total)

Water Quality Investigations during 2005

For the calendar year 2005, the DEP Division of Environmental Policy and Compliance (DEPC) investigated 196 water quality complaints and 55 hazardous materials incidents, which resulted in the issuance of 25 Enforcement Actions (3 Civil Citations with fines totaling $1,750 and 22 Notices of Violation (NOVs). The cases resulting in enforcement actions are summarized in Table III-E5.

Table III-E5. Summary of Water Quality Investigations during 2001.

Date Issued	Citation/NOV	Violation	Defendant	Defendant's Address
1/26/05	NOV	Concrete Discharge	Rockville Fuel & Feed	14901 Southlawn Lane, Rockville
2/10/05	NOV	Fuel Oil Discharge	Petro Oil and Heating	8101 Parston Drive, Forestville
2/17/05	NOV	Cooking Grease Discharge	Maria Velasquez	20040 Mattingly Terr. Gaithersburg
3/22/05	$500	Cooking Grease Discharge	Michael's Noodles	10038 Darnestown Rd., Rockville
3/22/05	NOV	Cooking Grease Discharge	Michael's Noodles	10038 Darnestown Rd., Rockville
3/25/05	$750	Chemical Discharge	Leisure World	3701 Ro ssmoor Blvd., Silver Spring
3/30/05	NOV	Cooking Grease Discharge	Chris Norris/Federal Realty	4900 Block Elm St., Bethesda
4/12/05	NOV	Leaking Auto Fluids	Moses East	11419 Flowerton Pl. Germantown
4/12/05	NOV	Leaking Auto Fluids	Shaizad Zekeria	7100 Needwood Rd., Derwood
4/13/05	NOV	Swimming Pool Discharge	Mr. & Mrs. Bobby Sanerson	15228 Dufief Dr., North Potomac
5/17/05	NOV	Paint Discharge	Nadia Gaharian	9202 Cedar Way Bethesda
5/10/05	NOV	Fuel Oil Spill	Chester A. Leishear	12500 Prices Distillery Rd, Damascus
8/11/05	NOV	Wastewater Discharge	Marble Mantle/David Proctor	5706 Wicomico Drive Rockville
6/22/05	NOV	Paint Discharge	Mr. David Flitt	9039 Sligo Creek Parkway, Silver Spring
6/27/05	NOV	Paint Discharge	Ron Sessoms	2254 Mountain Rd., Haymarket, VA
10/29/05	NOV	Leaking Auto Fluids	Tim Popolaski	11811 Smoketree Road Potomac
7/11/05	NOV	Leaking Auto Fluids	Tim Popolaski	11811 Smoketree Road Potomac
7/20/05	NOV	Swimming Pool Discharge	Mark Barteck	18400 Queen Elizabeth Drive Olney
7/27/05	NOV	Paint Discharge	JS Contractors LLC /John Simmons	2593 Bear Den Rd. Frederick
7/28/05	NOV	Paint Discharge	Brian Banes/College Works Painting	2515 Red Cedar Dr. Bowie
8/10/05	NOV	Cooking Grease Discharge	Tiajuana Café/ M. Esecsbar	8221 Georgia Ave. Silver Spring
9/19/05	NOV	Gasoline Discharge	Rammy Azoulay/U-Haul	8501 Snouffer School Rd. Gaithersburg
11/16/05	$500	Road Salt Spill	John DeZarn	451 Sherando Lane, Stephens City, VA
11/8/05	NOV	Leaking Auto Fluids	Erymyn Roberts	2212 Cherry Leaf Lane, Silver Spring
11/29/05	NOV	Swimming Pool Discharge	Richard Doring	10701 Montrose Ave, Garrett Park

Implementation Status of Stormwater Pollution Prevention Plans

Table III-E6 lists the County facilities covered under the State General Discharge Permit for Storm Water Associated with Industrial Activities (the General Permit). The State accepted the Notice-Of-Intents (NOI's) for these facilities in March of 2003 for coverage until November 30, 2007. The County's point of contact for these NOI's is within the DPWT.

A comparison of the 2004 to 2005 annual Site Assessments shows the continued need for greater attention to routine inspections and record-keeping, for elimination of outdoor vehicle washing as a non-storm water discharge, and more widespread employee training to enhance pollution prevention awareness. The clogged storm water best management practice at the Poolesville Facility also brought up discussion to increase the frequency of vacuum sweeping of paved areas at these facilities to reduce the amount of solids that can be carried in runoff.

Staffing changes, site changes, and site activities not included on the existing Stormwater Pollution Prevention Plans (Plans) were also identified during this year's Site Assessments. In particular, there needs to be an update of the Plans for four of the facilities: Damascus, Seven Locks, Gaithersburg/Equipment Maintenance Operations Center, and the Silver Spring/Brookeville facilities. The DPWT needs to find resources to update the Plans for these four facilities, either by consultant or using in-house staffing resources.

The training issue is being addressed as a cooperative effort between the Pollution Prevention Coordinator in DEP and DPWT Compliance Officer, working with facility managers to train both existing employees and new hires. This will include coordinating with other agencies, such as Risk Management and Health and Human Services that already have existing education and training materials that could be used directly or adapted for use in Pollution Prevention training. The Office of Human Resources has adopted a mandatory Pollution Prevention Overview for new hires, but there is a need for site-specific training as well.

The lack of indoor vehicle wash facilities at three sites prevents the complete elimination of wash water to the storm drain system. Each facility continues to manage outdoor vehicle washing in order to eliminate the potential for contamination and the direct runoff of wash water to the storm drain system. Current CIP program projections point to no sooner than the year 2008 for realizing funding for facility renovations that would include indoor vehicle wash facilities.

Table III-E6. Implementation Status of Stormwater Pollution Prevention Plans	
Colesville Highway Maintenance Depot	**Anacostia-Paint Branch;12 acres**
1. Depot is in good condition and well maintained. *2. Yard area is clean and swept-a monthly contract is in-place for sweeping and the depot personnel sweep as-necessary- additional attention needed to store "small metal equipment items" off the ground and/or into storage sheds or under-cover i.e. tire chains, etc.* *3. Delivered sand and salt is mixed outside and stored undercover ASAP, storage domars have containment devices in-place to contain sand/salt mixture inside.* *4. Refuse material storage areas have minimal stored items on-site i.e. cut trees, woody debris; recovered asphalt, etc.-storage areas are emptied ASAP upon collection.* *5. Pollution Prevention Team has been updated and all necessary personnel have been identified.* *6. The BMPs were scheduled for cleaning and maintenance during spring '06.* *7. Pollution Prevention training occurred in January 11, 2005 for depot personnel* *8. Vehicle maintenance bays are well ordered and stocked to include spill kits and secondary containment trays; additional attention needed for floor care i.e. sweeping.* *9. Gasoline/Diesel Fuel pumping area is clean and no spills reported; Area has a well stocked spill kit available.* *10 A large un-used liquid magnesium tank is on-site and needs to be removed.*	
Damascus Highway Maintenance Depot	**Potomac-Great Seneca Creek; 1.4 acres**
1. Depot is in good condition and well maintained. *2. Yard area is clean and swept-a monthly contract is in-place for sweeping and the depot personnel sweep as-necessary.* *3. Gasoline/Diesel Fuel pumping area is clean and no spills reported; Area has a well stocked spill kit available.* *4. Public refuse collection area is clean and swept.* *5. Vehicle and equipment storage areas are clean, well maintained, and neat.* *6. Pollution Prevention Team has been updated and all necessary personnel have been identified.* *7. Pollution Prevention training occurred on January 17, 2006.* *8. Containment barriers are in-place to prevent run-off from the site.* *9. Storage domars for salt/sand materials have containment barriers placed to prevent run-off.* *10. Maintenance bays are well ordered and stocked to include spill kits and secondary containment trays.* *11. The BMP's were scheduled for cleaning in spring'06.*	
Gaithersburg Highway Maintenance Depots, Equipment Maintenance Operations Center and Gaithersburg/Rockville Transit Services	**Potomac-Rock Creek; 26 acres**
1. Depot is in good condition and well maintained. *2. Yard area is clean and swept-a monthly contract is in-place for sweeping and the depot personnel sweep as-necessary- additional attention needed to store "small metal equipment items" off the ground and/or into storage sheds or under-cover i.e. manhole covers, small metal equipment and parts, etc.* *3. Truck wash facility is operational and in-use.* *4. Filter cloth barrier is in-place to prevent run-off from the asphalt recovery area.* *5. The large tar pot is still on-site and needs to be removed.* *6. Pollution Prevention Team has been updated and all necessary personnel have been identified.* *7. Pollution Prevention training occurred on January 10, 2006.* *8. Maintenance bays are well ordered and stocked to include spill kits and secondary containment trays.* *9. Storage domars for salt/sand materials have containment barriers placed to prevent run-off.* *10. Gasoline/Diesel Fuel pumping area is clean and no spills reported; Area has a well stocked spill kit available.* *11.Transit Maintenance and fueling areas are well maintained, orderly and clean* *12. The BMP's were scheduled for cleaning in spring.*	

Table III-E6. Implementation Status of Stormwater Pollution Prevention Plans	
Poolesville Highway Maintenance Depot	**Potomac-Dry Seneca Creek; 4 acres**
1. The fuel station area is under renovation and refurbishment; the gasoline UST has been removed and the hole sealed and patched with a concrete slab; the associated pump has been removed. Additional renovations are continuing. *2. The yard is swept and well maintained.* *3. The BMPs were scheduled for cleaning in June/July '06. The previously troublesome sand filter was re-built in '05/06 and is functioning per design.* *4. Pollution Prevention Team has been updated and all necessary personnel have been identified.* *5. Pollution Prevention training occurred on January 18, 2006.* *6. The Public refuse area is cleaned and swept. The oil re-cycling areas has been upgraded with two (2) new oil tanks and one (1) new transmission fluid tank, complete with new secondary spill containment trays; the area still needs a three-sided containment shed w/ a roof to prevent rain water infiltration.* *7. The BMP's are scheduled for cleaning in May/June.* *8. Maintenance bays are well ordered and stocked to include spill kits and secondary containment trays.* *9. The large tar pot is still on-site and needs to be removed.* *10. The salt/ash domars have containment barriers in-place to prevent run-off.* *11. Stored road materials outside have containment barriers to prevent run-off.*	
Seven Locks Maintenance Center	**Potomac-Cabin John Creek; 19 acres**
Highway Maintenance Depot *1. The Highway Depot is under-going renovations to be completed in 2008/2009. A new salt barn has been erected and is in-use, doors are not installed as-yet, containment devices needed to be placed to prevent run-off of salt/sand materials stored inside; new BMP's i.e. Bay Savers (2) and a new sand filter (1), manholes and conveyances are currently being installed; additional renovations include a new Admin/Office/Personnel building, a new truck wash facility and new covered vehicle storage areas and sheds. As renovations are in progress the depot is in good condition and well maintained.* *2. Yard area is clean and swept-a monthly contract is in-place for sweeping and the depot personnel sweep as-necessary- additional attention needed to store "small metal equipment items" off the ground and/or into storage sheds or under-cover i.e. vehicle tire chains, etc.* *3. A large un-used liquid magnesium tank is on-site and needs to be removed.* *4. Pollution Prevention Team has been updated and all necessary personnel have been identified.* *5. Pollution Prevention training occurred on January 09, 2006.* *6. Maintenance bays are well ordered and stocked to include spill kits and secondary containment trays.* *7. Refuse material storage areas have minimal stored items on-site i.e. cut trees, woody debris; recovered asphalt, etc.-storage areas are emptied ASAP upon collection.* *Fleet Fuel/Maintenance Facility* *1. The BMP's are scheduled for cleaning in May/June '06.* *2. Gasoline/Diesel Fuel pumping area is clean and no spills reported; Area has a well stocked spill kit available.* *3. Vehicle maintenance areas are well maintained, orderly and clean.* *4. Car wash facility is well maintained and clean.* *5. Vehicle storage area is clean and well maintained.* *Materials Testing Lab* *1. Lab area is very cleaned and organized.* *2. Discarded test material area needs containment devices placed to prevent run-off.* *Tech Center* *1. Area is organized and well maintained despite the abundance of equipment.* *2. The warehouse area is very well maintained and organized.* *Sign and Marking Shop* *1. The yard area is clean and all materials neatly stacked.* *2. Interior work areas and lounge areas are clean and well maintained.* *3. Covered outdoor storage areas are clean and well maintained.*	

Table III-E6. Implementation Status of Stormwater Pollution Prevention Plans	
Silver Spring/Brookville Road Service Park	**Potomac-Rock Creek; 18 acres**
Highway Maintenance Depot *1. Depot is in good condition and well maintained.* *2. Yard area is clean and swept-a monthly contract is in-place for sweeping and the depot personnel sweep as-necessary.* *3. Pollution Prevention Team has been updated and all necessary personnel have been identified.* *4. Pollution Prevention training occurred on January 20, 2006.* *5. Maintenance bays are well ordered and stocked to include spill kits and secondary containment trays.* *6. The BMP's are scheduled for cleaning in June/July 06.* *7. Maintenance bays are well ordered and stocked to include spill kits and secondary containment trays. Attention needed to sweep the floor of Oil-dry/Kitty Litter.* *8. Delivered sand and salt is mixed outside and stored undercover ASAP, storage domars have containment devices in-place for containment.* *9. Material storage shed areas are neat and clean and well maintained.* *10. Vehicle parking area is clean.* *11. Gasoline/Diesel Fuel pumping area is clean and no spills reported; Area has a well stocked spill kit available.* *12. A large un-used liquid magnesium tank is on-site and needs to be removed.* *Fleet Maintenance Area* *1. Maintenance bays are neat, clean, and well organized.* *2. The bus parking area was recently steam cleaned and swept.* *3. Fleet Maintenance needs more frequent inspections of storm water facilities on-site. The containment sock(s) at the oil/grit separator needs to be changed, inspected, and changed more frequently.*	
Solid Waste Transfer Station/ Materials Recycling Facility	**Potomac-Rock Creek; 43 out of 52.5 acres**
1. .Quarterly inspection of all outfalls and BMP's on site (in addition, there is a daily walk-around as part of other on-site inspections and some SW issues are also noted during the walk-around). *2. Site is generally well kept; litter pick-up to address trash blown from the 1,000 plus vehicles a day that pass through the site is performed daily.* *3. Inlet screens have some partial blockage from blowing leaf and grinding debris.* *4. Pavement repairs in the scrap metal area have been performed since last year to eliminate ponding.* *5. Additional shielding has been provided to the Household Hazardous Waste Area to reduce windblown rain getting into the area.* *6. A project has been approved to cover the outdoor glass bins behind the Recycling Center. The roof will be built in 2006.*	
Gude Landfill (closed 1982)	**Potomac-Rock Creek; 120 acres**
1. Quarterly inspections continue for all outfalls and BMP's on the site. *2. Site remains in vegetative and stable condition.* *3. Several persistent leachate seeps remain at or adjacent to the site in areas that cannot be readily repaired. Given that this is a pre-regulatory era landfill, the number of seeps and liquid volume associated with the seeps is minimal.* *4. Some litter needs removal from areas where homeless individuals camped by the concrete storm debris overflow pad and at the top of the site and near a soil stockpile that has been stabilized and vegetated.*	
Oaks Landfill	**Patuxent-Hawlings River and Potomac-Rock Creek;190 out of 545 total acres**
1. Quarterly inspections continue for all outfalls and BMP's on the site. *2. Storm water pond berms and emergency spillways are mowed. Additional pond maintenance including removal of beaver dams and repairs to storm water pond risers was performed in April 2006. There are plans to add rip rap to control wave erosion on the berm on the edge of the largest pond in June 2006. A task order has already been issued for this work.* *3. Site continues to be well vegetated and all storm water conveyance systems are intact, although two down-chutes on the landfill have experienced substantial settling and have been repaired several times.*	

E3. Illegal Dumping and Spills

The DEP continues to support its Illegal Dumping Hotline 240-777-3867 ("DUMP"). During the year 2005, there were 387 complaints of illegal dumping, which resulted in the issuance of 27 Enforcement Actions (9 Civil Citations with fines totaling $4,500 and 18 Notices of Violation (NOVs)). The vast majority of complaints concerned bags of trash, vegetation (leaves and brush), or other unwanted materials either dumped or being stored on private or public property. Only a small percentage of these cases represented a potential for direct runoff of contaminated material into a storm drain or receiving system. Complaint resolution invariably involved removal and proper disposal of trash and debris and proper storage (i.e. under cover) of other materials.

E4. Sediment and Erosion Control

The Permit requires that the County report on program status, responsible personnel certification classes, and grading permits for projects greater than one acre.

- Program Status

  The DPS received a letter from the MDE on January 4, 2006 which in part stated "[T]he Sediment Control and Stormwater Inspection staff should be commended for their effort. Based on the effectiveness of Montgomery County's erosion and sediment control program, I am pleased to grant your request for continued erosion and sediment control authority. This delegation becomes effective July 1, 2006." There were no needed program improvements identified in the MDE report.

- Responsible Personnel Certification

  The DPS conducted nine classes during 2005 for Responsible Personnel Certification. The CD in Attachment A includes the list of 84 participants.

- Grading Permits for Projects Greater Than One Acre

  The CD in Attachment A includes the list of grading permits issued for projects with greater than one acre of disturbance. There were a total of 167 projects with 1,045.5 acres of disturbance.

E5. Public Education and Outreach

General Environmental Outreach

The County continues a multimedia approach for environmental outreach and education. The DEP routinely provides information on its web page and in response to direct requests on water conservation, stormwater facility maintenance, lawn care and landscape management, pet waste management, illegal dumping, and reporting of water quality incidents. The DEP maintains and distributes both to the general public and to County staff a listing of telephone numbers by agency for reporting water quality problems or obtaining more information on common water quality issues. This listing is included on CD in Attachment A.

The DPWT's Division of Solid Waste Services provides outreach on household hazardous waste and litter control, recycling, and composting at a variety of outreach events throughout the County and on its web page at
http://www.montgomerycountymd.gov/swstmpl.asp?url=/content/dpwt/solidwaste/index.asp.
The DPS's Well and Septic Section provides information on well and septic system management.

The DEP also supports The GreenMan Show on local Cable Channel 6 which provides information on a wide variety of environmental topics of interest to County residents. The GreenMan Show is available online via streaming video and as video-on-demand at ***greenmanshow.com***

Watershed Outreach

With the reorganization of the DEP during 2004-2005, the responsibility for all general watershed outreach moved from the Watershed Management Division (WMD) to the Division of Environmental Policy and Compliance (DEPC). The WMD continued to conduct Capital Improvement Program (CIP) project outreach, including public meetings, field walks, and telephone and e-mail responses. The DEPC provides outreach support for regional efforts under the Anacostia Watershed Restoration Agreement and the Patuxent Reservoirs Watershed Protection Agreement. During 2005, this included:

- Assisting community groups in organizing and conducting stream clean-ups. This included coordination with other agencies including MNCPPC and WSSC to sponsor clean-ups on their properties.

- Providing over 1,000 'Don't Dump' Storm Drain markers to schools, scout troops, and community groups. This is a cooperative effort with the DPWT's Community Outreach Section.

- Assisting in the Patuxent Watershed Schools Mentoring Partnership for the 22 County schools near the Patuxent River. This effort, led by WSSC agencies, provides hands-on, professional assistance with environmental projects for schools in the Partnership. Those schools agree to share their learning experiences at twice-per-year workshops and "mentor" new Partner schools.

- Preparing and distributing the monthly electronic newsletter to teachers and administrators in and near the Patuxent Watershed. The monthly newsletter provides information about environmental workshops, grants programs, and other activities to involve students, parents, and teachers in watershed protection.

- Providing a technical liaison and staff support for the monthly meetings of the Water Quality Advisory Group. Established in 1995, the 15 voting members represent the academic and scientific, agricultural, business, environmental, and public-at-large communities. There are 3 public agency representatives, one each from the DEP, the Maryland-National Capital Park and Planning Commission (MNCPPC), and the WSSC. The group's mission is to evaluate and recommend to the County Executive and County Council policies, programs, and priorities for protecting the County's water resources.

Rainscapes

During 2005, the DEP continued to maintain the Rainscapes Program with the equivalent of a one-third staff person. The Rainscapes program goes beyond the CIP to involve residents and resource users in pollution source control, water conservation, and creation of backyard wildlife habitat. The County received a National Association of Counties' 2005 Achievement Award for its 'Rainscapes for Urban Watershed Restoration'.

The DEP was a partner in two Rain Barrel workshops in 2005, giving away 75 barrels, and provided Rainscapes workshops with a focus on using native plants to community groups, garden clubs, and schools in the County. The DEP also provided technical assistance for rain garden projects in the City of Takoma Park and Chevy Chase Village, and support for the Potomac Conservancy's 'Backyard to the Bay' exhibit at the C&O Canal National Historical Park.

The DEP continues to receive requests for presentations, technical advice, and additional assistance from existing partners as well as requests from new community groups. With grant funding from the National Fish and Wildlife Federation and through the EPA, the DEP has programmed a series of 'Make and Take' Rain Barrel Workshops and rain garden demonstration projects during 2006.

Volunteers in Planting

The Montgomery County Volunteers in Planting (VIPs) was initiated during 2005 to augment the DEP's stream restoration program. This is a beyond the CIP effort to enhance and maintain riparian forested buffers associated with stream restoration projects on publicly-owned land. The DEP identifies candidate projects and then provides lead technical assistance to community-based environmental organizations whose goals promote hands-on stewardship for water quality improvement and natural resources protection. The VIP program helps foster community stewardship by DEP providing technical guidance and the environmental organizations using their volunteer base to secure grant funding to support the VIP.

During 2005, two planting projects were completed with grant funding secured by the volunteers. The Northwood Project used approximately $10,000 in National Tree Trust funding awarded to the Izaak Walton League of America-Wildlife Achievement Chapter (IWLA-WAC) matched by about $11,000 of in-kind and cost-share funding. The Lower Hawlings project used approximately $2,000 in Chesapeake Bay Trust funding to the Patuxent-Potomac Chapter of Trout Unlimited (TU) for replanting and enhancing of the riparian area along a recently completed stream restoration project.

At the Northwood Project, approximately 1.5 acres of new and enhanced upland and riparian forest were planted with a commitment by the IWLA-WAC to maintain the approximately 400 native trees and shrubs for at least three years after planting. The Environmental Science Academy at nearby Northwood High School will be monitoring the growth and survival of the trees at this project, integrated into their Environmental Science curriculum and to help fulfill the State requirements for community service.

At the Lower Hawlings Project, about 200 native trees were planted along part of the 2,800 ft restored reach. Figure III-E2 shows before and during planting photographs of one part of that reach. The TU has committed to monitoring and maintaining the buffer planting over the next several years to control invasive plant overgrowth. The DEP provided technical guidance and also acted as a liaison with three local high schools to solicit additional volunteers for the planting phase.

Figure III-E2. Before and during Volunteers in Planting restoration along Lower Hawlings River. Fall 2005.

Montgomery County Environmental Policy

In order to lead by example, the County Executive and County Council developed and approved a resolution creating the Montgomery County Environmental Policy. The main objective was to increase the awareness of all County agencies, departments, and employees that their actions have environmental consequences and that we all have a responsibility to promote public health, environmental resource management, and environmental protection.

For FY05, departments and agencies committed to perform in four priority environmental issues for their Environmental Action Plans (EAPs). These priority issues were 1) Energy, 2) Pollution Prevention, 3) Environmentally Friendly Purchasing, and 4) Green Buildings. In addition, the Executive Branch departments were requested to include the Energy-Wise Offices Program in their EAPs. The purpose of this initiative was to promote energy conservation that was expected to save the County nearly $500,000 during FY05 to offset the cost of purchasing the five percent electricity demand with wind power. The purchase of wind power would provide reductions in airborne pollutants which was also expected to reduce pollutants to receiving waters. Significant accomplishments during the first year of the program include:

- Developed a web-based Environmental Policy Database for the departments and agencies to input their environmental action plans for the current year and plan their future action plans. The web-based Environmental Policy Database also includes yearly environmental action summary reports for FY05 and FY06 and checklists of current status of activities by department.

- Compiled all department and agency Environmental Action Plans (accomplished and proposed) and developed summary of the accomplishments and successes.

- As part of the "Montgomery's Best – 2005 Honor Awards", developed a new "Environmental Award Program" category that recognizes leadership in promoting and implementing the objectives of the County's Environmental Policy.

- Incorporated the requirements for Best Environmental Practices in the FY07-12 CIP process.

- Incorporated the requirements for Best Environmental Practices in the County's Operating Budget.

- Established the "Green Buildings Technical Committee" to Develop minimum facility design and construction standards for all County agencies consistent with LEED and best practices.

- Established the multi-agency "Going Green at Home" initiative to increase home owner awareness of green building advantages for their own renovations and future purchases.

.

In the second year, environmental coordinators will represent their departments, not only in planning and reporting on individual department efforts, but also in the development of an overall Countywide implementation effort. Individual departments will continue their work to fully implement their internal EAPs. In addition, environmental coordinators will target specific areas for environmental improvement and work in an integrated manner to develop programs. More than one department may be involved in creating the elements of a program, which can then be implemented in all departments. The first program area for interdepartmental cooperation is Environmentally Preferable Purchasing to require that cleaning services contract use environmentally preferable cleaning products for county owned buildings.

E6. Road Maintenance and Pollution Prevention

Storm Drain Cleaning

There was no change in level of effort of storm drain cleaning during 2005. The Highway Maintenance Section removed accumulated material from a total of 11,460 feet of storm drains. This is a slight increase compared to the 10,296 feet of storm drains clean during 2004, which represented about 0.18% of the estimated 5.72 million total feet of County storm drains. There is no annual schedule for storm drain maintenance, with the countywide program being complaint driven to remove clogged inlets or drainage problems on public or private property. At the current maintenance rate of less than 0.5% of the system per year, it will take 200 years for a first pass of the entire system.

Street Sweeping

In Fiscal Year (FY) 03 and FY04, the DEP agreed to cost-share for vacuum-street sweeping as a BMP to reduce the amount of solids that could enter County-maintained stormwater management facilities. The DEP requested that areas with stormwater management ponds and dense urban development should be swept first, including those in the Anacostia and Watts Branch watersheds.

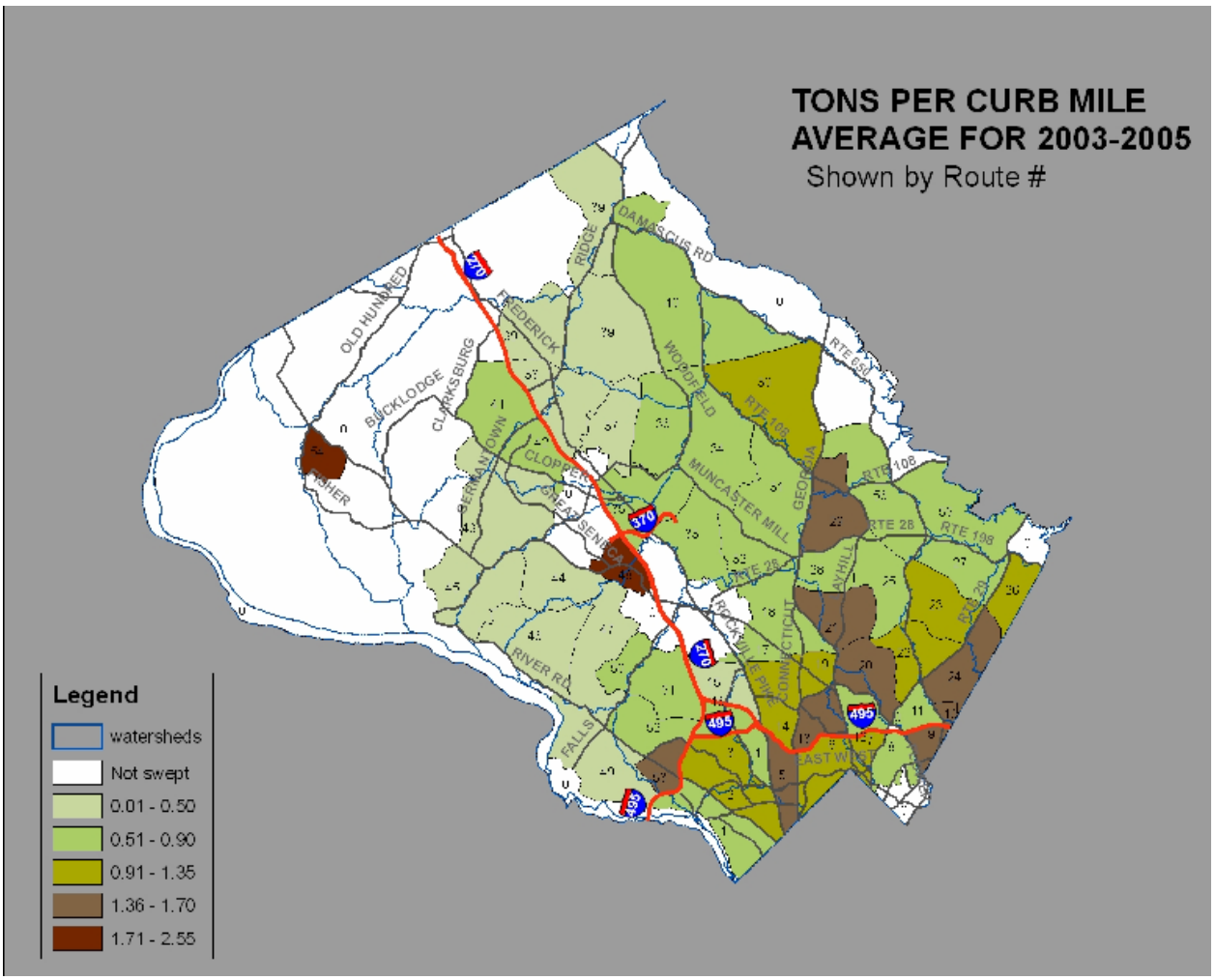
Beginning in 2003, the DPWT required the sweeping contractor to keep track of the total amount of material swept by route, to translate into pounds collected per curb mile per area in the County. The DPWT has also condensed the sweeping cycle from March through August down to about three months from March through June. This reduces the amount of time the material is exposed to precipitation and runoff into the storm drain system

During the winter season for 2005, the DPWT-DHS applied 24,450 tons of sand and salt. The total removed by the once per year streetsweeping program was 1,676.00 tons which is less than 7% of the total applied. Figure III-E3 shows a summary of the tons per curb-mile by sweeping district compared to watershed boundaries. The darker the color, the greater the amount per curb-mile that was swept up. The southern part of the county, particular the Anacostia and Lower Rock Creek, show the greatest amounts of material removed. These two areas will continue to be the areas of the County targeted for priority sweeping.

Pilot Project

The DEP and DPWT are working cooperatively on a pilot project in the White Oak area of the Anacostia to evaluate the effectiveness of increased streetsweeping and storm drain inlet cleaning as a pollution source control practice. This project is connected to the long-term discharge characterization monitoring required in Permit Part III-D1. The pilot project includes water chemistry, solids, and trash monitoring. Preliminary results should be available for the next annual report. The County anticipates using these monitoring results to estimate the amount of material that can be prevented from entering the storm drain system and being washed downstream.

Figure III-E3. Summary of Materials Collected during Streetsweeping for 2003-2005.



E7. Integrated Pest Management

Montgomery County is required to examine the use, control, and reduction of herbicide, pesticide, and fertilizer for all departments. The County continues to implement its Integrated Pest Management (IPM) program at county owned facilities by the DPWT-Division of Operations.

Table III-E9 shows pesticide use at facilities maintained by the DPWT-Division of Operations for calendar years 2005 and 2004. There were no fertilizers applied at any of the 98 facilities comprising 250 acres that were in the County landscaping program during 2005.

The County Pest Control Contractor and County Property Managers continue to work with facility occupants to stress the need for proper sanitation measures to control pests. Routine inspections are carried out to identify possible sources of infestation which are immediately corrected. Pesticides are used only when all other measures have failed.

Table III-E7. Pesticide Usage at County-Maintained Facilities for 2005 and 2004.

Purpose	2005	2004
Landscaping No fertilizers were applied.	*250 acres at 98 facilities* Roundup 7 gallons (undiluted)	*250 acres at 98 facilities* Roundup 10 gallons (undiluted)
Structural Pest Control *Outside use only.	*1,600,000 sq ft at 77 facilities* Maxforce gel 3.3 (lb) Boric Acid (lb) 25 Roach glue boards 601 ea. Maxforce roach baits 450 ea. Drax ant gel 3.1 (lb) Wasp spray (20 cans) 30 (lb)* Delta Guard (granules) 540 (lb)* Talon-G (rodent bait) 10.7 (lb)	*1,600,000 sq ft at 77 facilities* Maxforce gel 2.1 (lb) Boric Acid 24.3 (lb) Roach glue boards 559 ea. Maxforce roach baits 186 ea. Drax ant gel 3.1 (lb) Wasp spray (32 cans) 28.5 (lb)* Delta Guard (granules) 600 (lb)* Talon-G (rodent bait) 10.3 (lb)*

F. Watershed Restoration

The County is continuing its systematic assessment of water quality, stream resource conditions, and habitat modification within all of its watersheds. Since 1996, the County has completed assessments and identified restoration opportunities in about 40% of its total watershed area, including all of the urban watersheds required in its first Permit.

Table III-F1 summarizes the status of the DEP's watershed restoration efforts through 2005. Total cost through December 2005 (including State and Federal cost-share funding) for watershed studies completed or ongoing is $6.077 million and for projects completed is $7.310 million dollars.

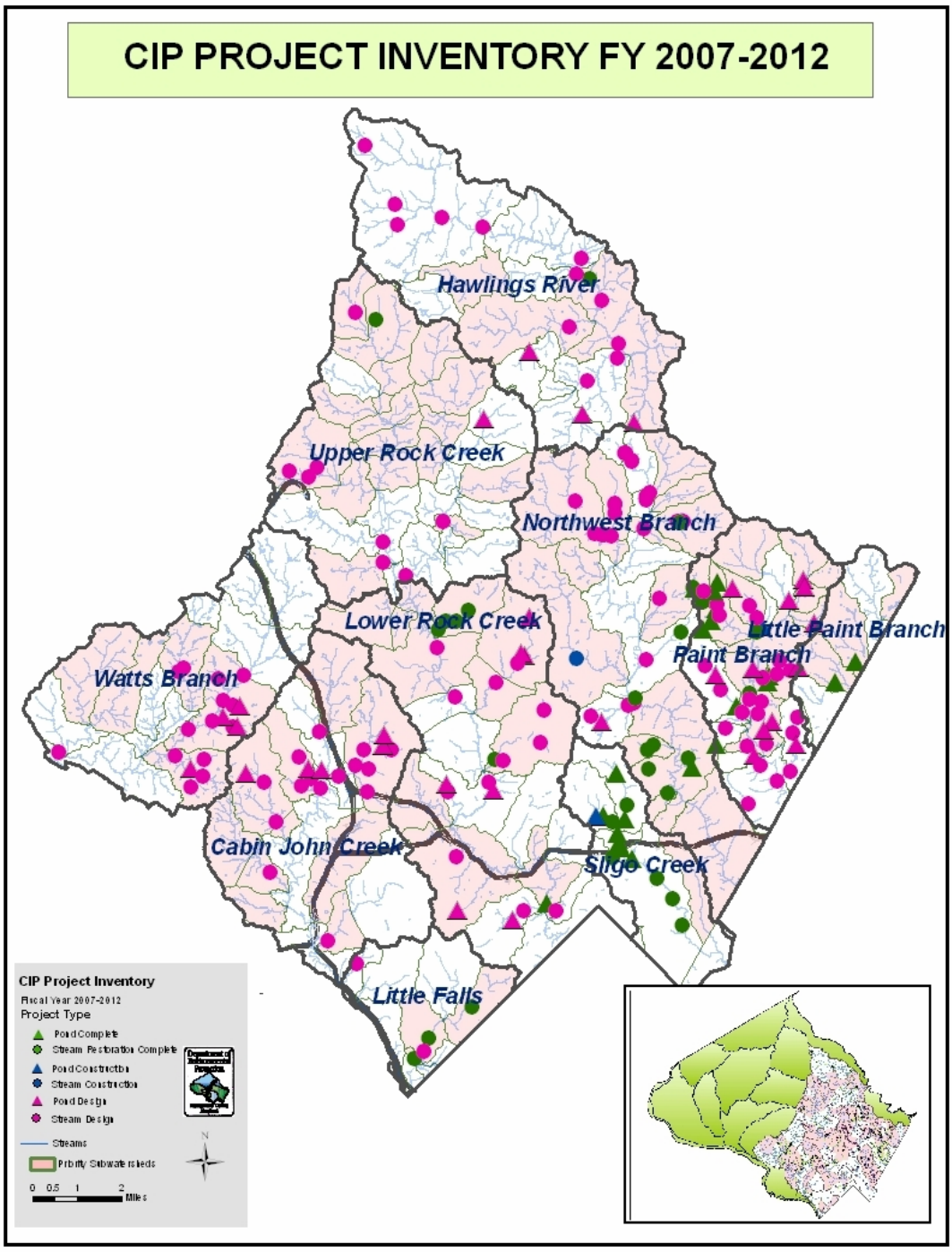
During 2004, the County began the watershed restoration inventory in the Great Seneca Creek and Muddy Branch watersheds as cooperative efforts with the USACE and the City of Gaithersburg. These areas represent roughly one-third of the total County land area and include drainage from the densely developed areas of Gaithersburg and Germantown.

Table III-F1. Implementation Status of County's Watershed Restoration Projects

PERIOD	1996-2001 (1st permit)	2002-2004	2005
Watershed Studies completed or ongoing (sq. miles)	191.2 (completed)	28 (completed)	188.3 (ongoing)
Retrofits Completed (acreage)	493	235	0
Restoration Projects Completed (linear miles)	5.65	3.35	3.7
COST (million $)	6.694	5.798	5.864

Figure III-F1. shows a summary of the CIP project inventory for fiscal years 2007-2012. Not all of these projects will be built during that period because most of these projects are still in the preliminary design phase. However, the DEP goal is to add stormwater to 4,700 acres of currently uncontrolled drainage and to construct restoration projects on 30 miles of degraded streams by 2012.

Figure III-F1. Capital Improvement Program (CIP) Projects Inventory.



F1. Watershed Screening

Of the 43 stations monitored during 2005, only one had impairment in both fish and benthic macroinvertebrate fauna. The screening results are shown in Table III-F2. Station POFO102 was identified as having impairment other than that which could be attributed to habitat conditions alone. The stream here seems to be impacted the most by large stormwater events. A faint sewer smell was observed in the upper end of the station during the summer. There is a manhole almost in the stream in this area. DEP will work with WSSC to repair this sewer manhole. Stormwater management will need to be assessed in this drainage area as well. It appears there is little or no stormwater management in the housing developments draining to this tributary.

Furnace Branch Watershed

There were only two stations monitored in the Furnace Branch Watershed, both for benthic macroinvertebrates and fish. One station, MRFB201, scored an excellent biological condition for bugs and fish. The other station, MRFB103, scored a good condition for benthics and fish. Habitat conditions for both stations were in the good to good/excellent range for both the benthics and fish monitoring periods. No follow up actions are required for this watershed.

Table III-F2: Results of Monitoring for possible impairment not associated with long-term physical stressors.

WATERSHED (total number of stations)	STATION and POSSIBLE CAUSES OF IMPAIRMENT	FOLLOW UP ACTIONS
Furnace Branch (2)	No locations	None required
Hawlings River (8)	No locations	None required
Little Monocacy (5)	No locations	None required
Potomac Direct Watershed (10)	POFO102: Located near Canal Bridge Court. Summer high flows, entrenched stream channel, and possible long term pollutant event.. Stream seems to be impacted the most by large stormwater events. It was noted in the summer time of a faint sewer smell in the upper end of the station. There is a manhole almost in the stream	DEP will work with WSSC to report the sewer manhole that is almost in the stream. Stormwater management will need to be assessed in this stream. It appears there is little or no stormwater management in the housing developments draining to this tributary.
Upper Patuxent (18)	No locations	None required

Hawlings River Watershed

There were eight stations monitored in the Hawlings River Watershed for benthic macroinvertebrates and fish. Station HWGT204 scored a biological condition as excellent for benthics and good for fish. Station HWHW407 scored a biological condition as excellent for fish while a fair for benthics. Station HWHW209 scored a good condition for both the benthics and fish conditions. Station HWHW206 scored a fair condition for both the benthics and fish conditions. Station HWGT202 scored good for benthics and fair for fish with habitat conditions spanning between a fair to good range. HWHW301 scored good for benthics and an upper poor for fish while having habitat conditions ranging from fair to good.

The benthics and fish conditions for HWJC301 rated fair with habitat conditions rating from fair to good. HWJC104 had a fair benthic condition with a poor fish condition. The habitat rating for station HWJC104 was rated as fair during both the benthics and fish monitoring. Station HWJC104 had only four fish species, with most being pioneering fish species which could indicate that this stream may dry up during warmer conditions. Since the biological conditions matched the habitat conditions at all stations, no follow up actions are required for this watershed.

Little Monocacy Watershed

In the Little Monocacy Watershed, 5 stations were monitored for benthic macroinvertebrates and fish. Station, LMLM145 is monitored for benthics as part of the regulatory requirements associated with the County's composting facility in Dickerson and not as part of the County's baseline monitoring. The small tributary being monitored receives discharge from one of the treatment basins within the facility.

All baseline monitoring stations scored in the good to excellent condition range for faunal groups. Habitat conditions for all stations were in the good range for both monitoring visits. None of the baseline stations monitored in the Little Monocacy watershed depict biological impairments in both the benthic and fish communities and therefore no follow up monitoring is required.

Upper Patuxent Watershed

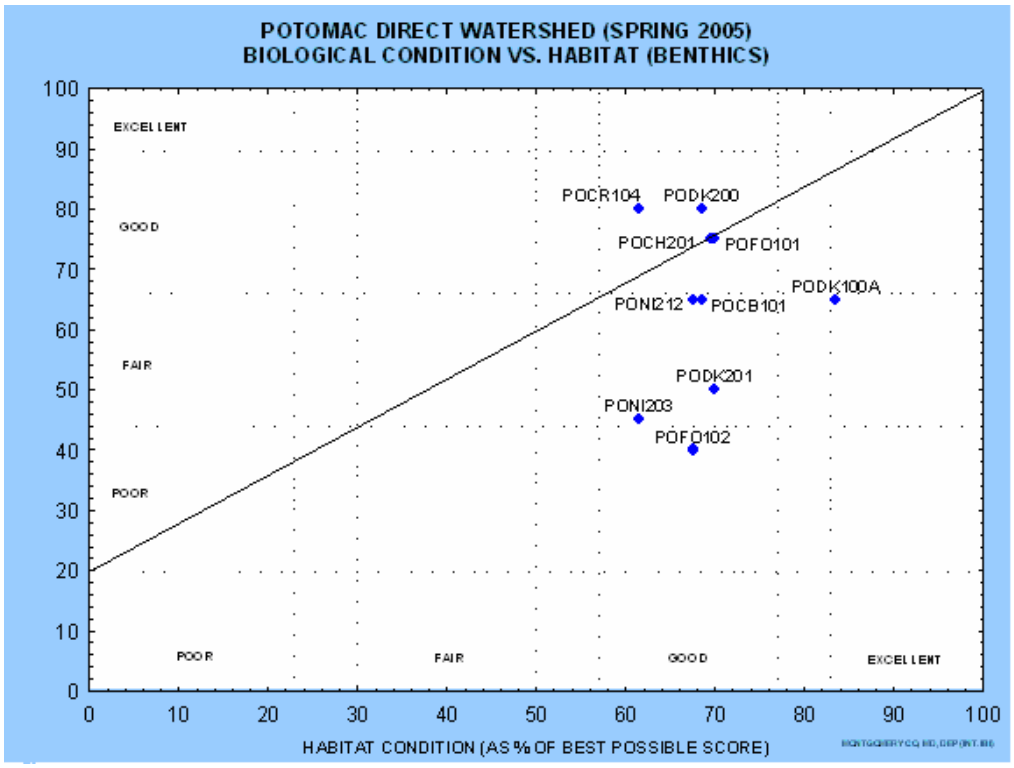
The Upper Patuxent watershed was monitored in 2005 as part of the second round of sampling for the County Stream Protection Strategy. The sampling consisted of a total of 18 biological monitoring stations for benthic macroinvertebrates and 11 sites for fish. There were no stations that scored poorly in both habitat and biology indicating areas of concern. No stations in the Upper Patuxent watershed were identified as impaired due to other than habitat stressors.

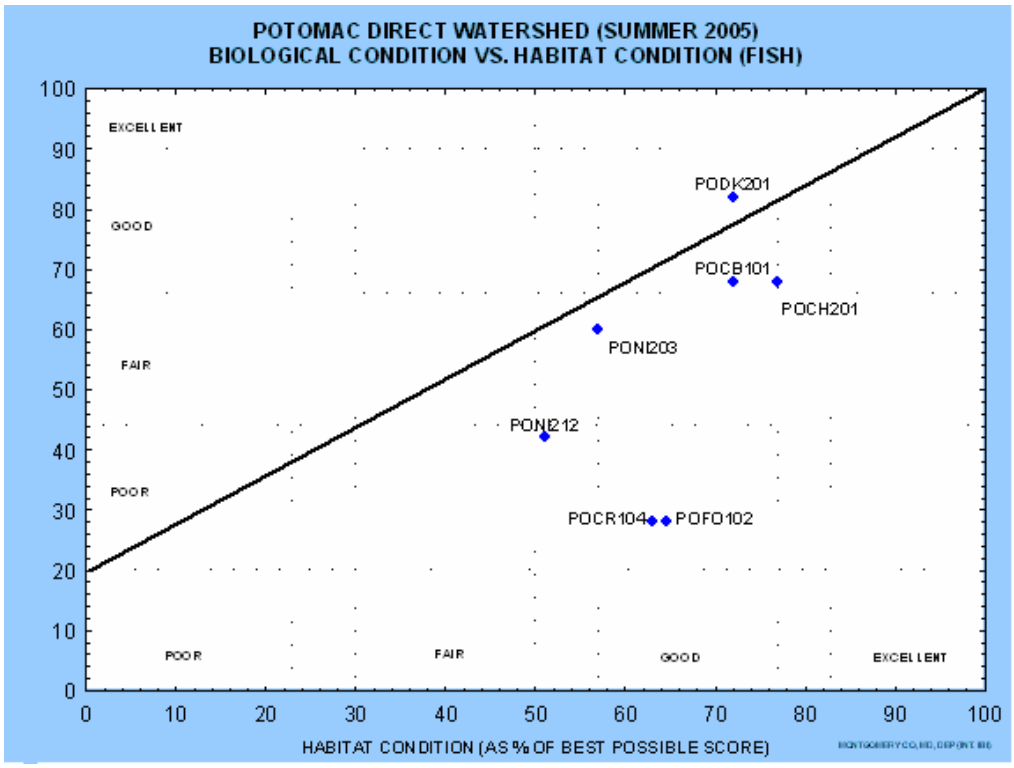
Potomac Direct Watershed

During the 2005 monitoring season ten stations were monitored for benthic macroinvertebrates and seven for fish, Figure III-F2. All of these sites scored habitat conditions from Fair/good to Excellent during both monitoring sessions. Station POCH201 scored good bug and fish conditions while station PONI203 scored fair for bug and fish conditions. Two stations, PODK100A and PODK200, are special project stations for the Dickerson Composting Facility and are monitored for benthics only, scoring good and fair respectively.

Station POFO101 scored a good bug condition but during fish monitoring there was no fish found, most likely due to the fish barrier downstream of this station. POCR104 also scored a good bug condition however the fish condition scored poor due to the small drainage area. The bug condition for station PODK201 scored fair while the fish condition scored a good condition. PONI212 scored a fair condition for bugs and scored an upper poor condition for fish. PONI212 and POCB101 scored fair conditions for bugs but PONI212 scored an upper poor condition for fish while POCB101 scored a good condition for fish. Station POFO102 scored poor for both bugs and fish conditions and are considered to have impairment due to other than habitat. Follow up monitoring will occur as part of the illicit discharge screening in 2007.

Figure III-F2. Identifying Impairment for other than Physical Habitat in Potomac Direct Watershed during 2005. Line shows expected direct correspondence between biological and habitat conditions.





Results from 2002-2005

Table III-F3. summarizes results of the countywide screening for impaired reaches requiring follow up to identify and eliminate impairment source. A comparison with results from the previous Permit period is shown at the bottom of the table.

Table III-F3. Summary of Countywide Screening for Impaired Reaches

Watershed	Year monitored	Total # stations	# stations with habitat -related impairment	# impaired by other than physical habitat
Little Falls	2002	5	5	0
Muddy Branch	2002	11	0	5
Watts Branch	2002	7	2	1
Hawlings River	2002 2005	7 8*	1 from sediment 0	0 0
Northwest Branch	2002 2004	11 22*	2 0	1 1
Potomac Direct	2002 2005	3 10	0 0	0 0
Bennett Creek	2003	6	1	0
Cabin John Creek	2003	10	2 from sediment	0
Little Bennett	2003	15	0	1
Lower Rock Creek	2003	10	3	4
Upper Rock Creek	2003	18	1 from sediment	3
Little Paint Branch	2004	4	1	1
Lower Patuxent River	2004	12	1 from sediment	0
Paint Branch	2004	5	3	2
Furnace Branch	2005	2	0	0
Little Monocacy	2005	5	0	0
TOTAL FROM 2002-2005		171	23 (14%)	19 (11%)
TOTAL FROM 1995-2001		259	122 (47%)	36 (14%)

*=increase in stations from stream restoration project monitoring

The fewer stations shown during this permit period compared to last is partly because there is one less year of sampling represented--1996-2001 covers six monitoring years while 2002-2005 only covers five. However, the number of stations per watershed has also decreased. Table III-F4. shows results from 1995-2001 for those watersheds also monitored during 2002-2005 and with at least one station identified as impaired. Except for Cabin John Creek and Rock Creek, the number of stations monitored per watershed was much lower during this Permit period than during 1995-2001.

From 1996-2001, the majority of impaired reaches (47% of monitored stations) showed flow-related habitat impacts, which included uncontrolled stormflow volume, baseflow reduction, and sediment deposition. About 14% showed impairment which could not be attributed to physical habitat factors and which required additional follow up activities to identify and address the impairment sources.

For this Permit period, the percent of stations identified as impaired was reduced to about 25% of those monitored compared to over 60% of those monitored during the first Permit period. One station in Northwest Branch, NWND201 was listed as having impairment to both biological communities during both 2002 and 2004. This station is in an area where stream restoration will occur with a goal to address physical habitat impairments affecting both faunal groups.

Table III-F4. Results for Stations Monitored during 1995-2001 and With at Least One Station Showing Impairment by Other Than Physical Habitat Factors.

Watershed	Year monitored	# stations	# stations with flow impair-ment	# impaired by other than flow	Follow up needed to identify impairment source
Cabin John Creek	1996	7	5	2	Watershed Restoration Study ongoing
Hawlings River	1997	16	3	3	Watershed Restoration Study ongoing
Little Paint Branch	1996	8	6	0	no follow up necessary
Northwest Branch	1995/1996	21	6	4	Additional outfall screening and water quality complaint follow up
Paint Branch	1995/1996	17	5	3	Additional outfall screening and water quality complaint follow up
Rock Creek	1995/1996	27	12	5	Targeted outfall screening and coordination with City of Rockville through Phase 2 General Permit

F2. Selected Restoration Watershed

Restoration Goals

Total acres developed under county responsibility for stormwater management (81,603) is about 33.6% of total county acres minus excluded areas. Of that, only 52% (42,480.32) has some sort of stormwater management. The number of acres of impervious surfaces showed an apparent increase from 2004 to 2005 but this was due to a refinement in the accounting method and does not reflect the actual incremental annual increase. However, the modified 10% goal has been increased from 1,717.4 to 2,694.5 acres. The combination of acres in Turkey Branch (2,434) and uncontrolled acres to completed restoration projects as of January 2006 (2,872) exceeds the 2005 adjusted impervious acreage so that the County is meeting the Permit-required restoration acreage goal.

Table III-F5. Impervious Surface Analysis for Watershed Restoration Goal

Total County Acres		324,552.00
Total Acres of Impervious Surface	(2005)	34,005.62
	(2004)	33,338.92
Total Acres of Impervious Surface minus exclusions	(2005)	26,945.15
	(2004)	17,173.83
10% Goal in Acres	(2005)	2,694.52
	(2004)	1,717.40
Turkey Branch (1st restoration watershed)		2,434.00
Excluded Areas: (total area, not just impervious area; in acres, except for State Maintained Roads)		
Rural Zoning (RC, RDT, RZ)		100,086.01
Parklands (Local, State, National)		61,432.55
Forests in Parkland		40,915.58
Municipalities with own stormwater management programs	*Rockville*	8,643.86
	Gaithersburg	6,418.99
	Takoma Park	1,339.23
State and Federal Properties		21,795.99
State Maintained Roads	Miles	1,580.40
	Acres	2,316.58
Acres under County control for Stormwater Management		**81,603**
Acreage with Stormwater BMPs	(2005)	42,480.32
	(2004)	41,956.00
Uncontrolled Drainage to Stream Restoration Projects (completed by Jan 2006)		2,872.20
Impervious area within Stream Restoration Projects (completed by Jan 2006)		499.40

Turkey Branch Watershed

A detailed assessment of the Turkey Branch subwatershed and a restoration schedule was submitted in January, 2003 as required in the Permit. Design and construction of restoration and retrofit projects have been delayed because of site constraints and administrative requirements associated with federal transportation program grant funds. Two new stormwater management ponds for control to 217 acres and a dry pond retrofit for 189 acres had been expected to be constructed during 2006, but this has been delayed. Two stream restoration projects in Lower Turkey Branch, covering impacts in 1.7 linear miles of stream, are expected to be completed by spring, 2007.

Pre-construction monitoring was conducted during 2002 and 2003 and summary tables presented in the annual report for 2003. The overall watershed stream stream resource condition is poor. Post-construction monitoring will take place one year, three years and then five years after completion of the projects to assess changes in stream condition.

Next Restoration Watershed: Lower Paint Branch

The County has selected the Lower Paint Branch as next to meet the Permit-required watershed restoration goal. Hollywood Branch, Snowdens Mill Tributary, and Stewart April Lane will be the three tributaries of emphasis. The stream conditions for these three subwatersheds range between fair to poor, reflecting the urban landscapes in these subwatersheds. There has been no change in status of implementation for this watershed. The Lower Paint Branch Watershed Study has not yet been finalized.

G. Program Funding

The Permit requires the County to submit a fiscal analysis of its expenditures and maintain adequate program funding to comply with all conditions of this permit. Table III-G1 compares expenditures in FY03 with those budgeted by fiscal year through FY07. The County's fiscal year runs from July 1 of one year to June 30 of the next. The County proposes a budget of $14.7 million to comply with Permit requirements during FY07. This is an increase of about $1.8 million compared to the previous year. Most of the increase comes from the CIP for watershed restoration project implementation.

In addition to the FY07 funding to meet Permit requirements, the County Council approved $1.25 million through the Water Quality Protection Charge to identify and increase implementation of low impact design (LID) and environmentally sensitive designs (ESD) in both the public and private sectors. The projects from this special funding will go beyond existing Permit-required programs, focusing on source control for watershed restoration. An additional $100,000 was allocated to initiate a flow and water chemistry monitoring network.

TABLE III-G1. Montgomery County's Funding for Fiscal Years (FY) 2003-2007 for Permit-required Programs. ***(CIP=Capital Improvement Program).***

PERMIT CATEGORY	Thousand $ by fiscal year				
	FY03	**FY04**	**FY05**	**FY06**	**FY07**
C. Source Identification Storm Drain Inventory	31*	98	195	160	110
D. Discharge Characterization *Outfall and Instream Water Chemistry Monitoring*	50	50	50	50	50
E. Management Programs					
Stormwater/Sediment Control Casework Management	369	394	322	256	338
Plan Review-Stormwater Management and Sediment/Erosion Control	864	924	1,220	1,306	1,847
Maintenance Inspections	989	899	1,379	995	1,007
Stormwater Facility Repairs *WQPC operating*	1,005** 26	2,773	1,941	3,056	1,781
DEP Public Outreach and Coordination	333	339	265	265	265
Water Quality Discharge Law Enforcement	246	268	147***	161	168
Inspection-Stormwater Management and Sediment/Erosion Control	945	956	1,178	1,319	1,894
Street Sweeping *DPWT* *DEP*	12	208 112	208 112	208 112	100 200
Baseline and Reference Stream Monitoring *(includes integrated Discharge Characterization and Design Manual programs)*	574	572	612	751	773
Countywide Groundwater Monitoring Program	185	262	236	155.5	158
Watershed Assessments and Action Plans *(inventories, planning, project design, and construction*): *CIP*	5,395	4,267	8,220	3,779	6,021
TOTAL	11,023	12,148	16,085	12,899	14,711

* *Reduced from budgeted $140,000 to meet mandated mid-year reductions.*

** *Reflects establishment of Water Quality Protection Charge (WQPC) to fund phase-in of public maintenance responsibility for privately-owned residential facilities*

*** *Apparent reduction not due to reduction in effort but in more accurate tracking procedures. This figure represents calendar year 12 month for 2004 not fiscal year 12 month.*

H. Assessment of Controls

Table III-H1 shows the estimate of TN and TP annual stormwater loads from developed lands and the reductions associated with existing stormwater controls in the County for 2005. Out of the total of 324, 552 acres in the county, 81,603 developed acres are under the County's control for stormwater. This excludes the rural zoning, parklands, forests in parklands, the Cities of Rockville, Gaithersburg, and Takoma Park, state and federal properties, and state maintained roads.

Approximately 55.6% of all developed lands under the County's jurisdiction are under some form of stormwater management, with an estimated 43.1% reduction in TN and a 55.6% reduction in TP loadings in runoff due to those reductions.

TABLE III-H1. Stormwater Delivered Loads (lbs) for the Year 2005 from Developed Acres under Montgomery County Stormwater Management
(excludes rural zoning, parklands, forests, Cities of Rockville, Gaithersburg, and Takoma Park, state and federal properties, and state maintained roads)

Description	Runoff Type	TN (lbs/yr)	TP (lbs/yr)
Acres Developed (under County stormwater management) 81,603	Uncontrolled	701,788	67,731
Acres with BMPs (estimated; includes stream restoration drainage) 45,352	With BMPs	399,417	30,089
Average % removal of all BMPs		23.6	38.6
% developed acres with control 55.6		% reduced 15.6	% reduced 19.7
average Loading (lbs/acre) (based on County monitoring 1994-2001)		8.6	0.83

PART IV. SPECIAL PROGRAMMATIC CONDITIONS

Tributary Strategies

The Permit requires the County to assist with the implementation of Tributary Strategies to meet nutrient reduction goals for the Tributary Basins that it lies within. These are the Middle Potomac and the Patuxent River Tributary Basins. During 2005, the County continued its participation on developing implementation plans with particular concern that the strategies reflect the level of effort for the Permit program. The Implementation Plans had not yet been finalized as of August 1, 2006.

The County continued its activities in ongoing multi-jurisdictional efforts to protect the Anacostia and the Patuxent Reservoirs Watershed. This has led to cooperative funding for monitoring, modeling, and restoration and retrofit project inventories, design, and construction. As part of these efforts, the County monitoring results are being used for regional screening and priority setting in these watersheds. The programs and projects being implemented through these watershed groups contribute toward the County's Permit-required watershed restoration goal and also the pollutant reductions that will be needed to meet the Tributary Strategies nutrient caps.

Next Permit Cycle

The County's Permit was scheduled for re-issuance in July, 2006 but all current Permit requirements will stay in force until a new Permit is issued. The MDE has indicated that the third-round Permit will not be significantly different from the current Permit. The County suggested changes in two sections: in discharge characterization to move from a retrofit to a source control approach and in assessment of controls to move toward twice per Permit cycle rather than annual estimation.

Discharge Characterization

The Permit requires that "Montgomery County shall contribute to Maryland's understanding of stormwater runoff and its effect on water resources by conducting a monitoring program." The DEP proposes to continue paired outfall and instream integrated water chemistry, biological, and stream morphology monitoring in the Stewart-April Lane Tributary and Lower Paint Branch Mainstem. Project implementation has moved from adding a stormwater pond to source control. and pollution prevention. There will be structural, non-structural, operational, and public outreach components in the revised watershed management approach.

Assessment of Controls

The existing permit requires an annual reporting on assessment of controls. This has been accomplished in the current and previous permit by loads estimation using pollutant loads per acre per land use type and an accounting by BMP type. The County reiterates the request in the fourth year Permit report to change the required reporting frequency for pollutant loads to only twice during the five-year permit--with the report for the second year and report for the fifth year. There is very little change from one year to the next in total loads or percentage of developed acres under control. This approach would still require annual documentation of implemented controls and results from the ongoing, rotating watershed stream resource condition assessments to identify impaired reaches and restoration progress.

Clean Water Task Force

In May 2006, the County Executive and County Council jointly established the 'Clean Water Task Force' to examine the status of the County's stormwater management and water resources protection programs. The Task Force members include the directors and high-level administrators from DEP, DPS, DPWT, Montgomery County Public Schools Facilities Management, the MNCPPC, and the WSSC. These public agencies either have regulatory and review responsibilities or potential significant impacts on runoff from their operations or facilities.

The Task Force goals go beyond the existing Permit requirements to improve communication and coordination across agencies and to recommend more effective policies and practices, including environmentally sensitive design and low impact design techniques, to protect County stream resources. The Task Force report, expected in spring 2007, will include short-term recommendations that can be implemented without significant funding or staffing impacts and long-term recommendations that may require additional staff, funding, policy, or regulatory changes.

Who to Call If you Have a Watershed or Water Quality Question:

Montgomery County Agencies

Department of Environmental Protection (DEP)

http://www.montgomerycountymd.gov/siteHead.asp?page=/mc/services/dep/index.html

Countywide Monitoring 240-777-7726
Hawlings River Watershed Restoration 240-777-7768
Illegal Dumping Hotline 240-777-7700
Rainscapes 240-777-7711
Stormwater Management Structures 240-777-7744
Water Pollution 240-777-7770
Watershed Outreach and Stewardship 240-777-7711

Department of Permitting Services (DPS)

Sediment from construction site entering streams 240-777-6366
Stormwater management and sediment control plan review issues 240-777-6320
Water supply wells and septic tank issues 240-777-6300

Department of Public Works and Transportation (DPWT)

Blocked storm drain, inlet pipe or erosion from public storm drain 240-777-ROAD
Recycling and hazardous household waste disposal 240-777-6400

Inter-County Agencies

Maryland-National Capital Park and Planning Commission (M-NCPPC)

Problems with streams, trash and debris in County parks and in streams 301-495-2535
Weed Warriors (Volunteer Invasive Plant Control Program) 301-495-2464

Washington Suburban Sanitary Commission (WSSC)

Patuxent Reservoirs Watershed Protection Agreement 301-206-8100
Discolored or odorous drinking water; sanitary sewer problems 301-206-4002

Maryland State Agencies

Maryland Department of the Environment (MDE)

Emergency Response (hazardous materials spills or discharges) 410-537-3937
Fish kills 410-974-3238

Department of Natural Resources (DNR)

Illegal dumping on state park land 301-924-2127